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Inside Dope

By GEORGE F. TAUBENECK

Learn to live and laugh — thus delay your epitaph

Stories of the Week
Common Sense from Homer Travis
Trenchant Analysis
Hitler Lowered the Boom
Some Good Dealers Survive
Biggest Challenge of All
Profit Incubator—Small Towns
Air Conditioning Dealers Interesting, Too

Stories of the Week

"My father is an Eagle, a Moose, an Elk, and a Lion," boasted a junior-high youngster.

"Yeah?" gasped his buddie. "How much does it cost to see him?"

An army chaplain expounded earnestly on the subject: "You can improve yourself if you improve your thoughts. Whatever you think you'll be, you'll become," he advised.

"If that's true," muttered a wishful-thinking soldier, "I'm either a pin-up girl or a Cadillac."

Common Sense from Homer Travis

Somewhat surprisingly Kelvinator—like Frigidaire, Westinghouse, Philco, Hotpoint, and General Electric—may decide that growth of the air conditioning business could assist the rejuvenation of their moribund distribution structure.

Or so we hear.

All these major appliance firms are attempting to equip new and remodeled homes with every plug-in device in their repertoire. More importantly, they're trying to restore PROFITS to their once-great business. And air conditioning may be one key, as we shall see later, to this dilemma.

Brilliant and amiable Homer Travis of Kelvinator outlines their *problems* succinctly:

"During the past several years, and particularly in 1957, we have been experiencing conditions that are upsetting," Travis notes. "It has been a period in which operating losses were far more prevalent than profits at all levels—manufacturer, distributor, dealer.

"It has been a period that has seen—and is still seeing—many manufacturers, distributors, and dealers go out of business.

"This situation is particularly frustrating when we view it against the potential this industry inherently has today, and against the truly glorious prospects we know it has for the future," Travis adds.

(Continued on Page 8, Col. 1)

Westinghouse, Carrier Unveil Lines at Home Show

* * *

Displays Packaged Units, Remote Heat Pump

CHICAGO—The 1958 line of Westinghouse packaged air conditioning products, including a remote heat pump, is being displayed at the National Association of Home Builders Show now in progress here.

Bruce D. Henderson, vice president of Westinghouse Electric Corp.'s air conditioning division, said the 1958 line will also include two new water-cooled units for residential and small commercial application.

The new Westinghouse units will feature "custom tailored" air conditioning for any part of the country, whether it is a dry-heat or wet-heat area, it was stated.

The "Matchmaster" line, which last year included only air-cooled units, has been broadened with the addition of two water-cooled units rated at 43,000 B.t.u. and 60,500 B.t.u., respectively. They are designed for both residential and small commercial application.

"Air-cooled Matchmaster

(Concluded on Page 29, Col. 4)

NWAHACA Sponsors

11 Heating, Cooling Courses In Colleges

CLEVELAND — Eleven colleges in the eastern half of the country will hold air conditioning and warm air heating short courses for dealer-contractors during the next three months, the National Warm Air Heating & Air Conditioning Association has announced.

The four-day courses offer dealer-contractors an opportunity to further their ability in system design, Ira Metcalf, chairman of the short course committee, declared.

Four design problems have been prepared for use in these courses. Each school will present three of the four problems. The student will have his choice

(Concluded on Page 15, Col. 1)

Decision Near on FTC Dairy 'Giveaway' Charges

WASHINGTON, D. C. — By Feb. 24, the Federal Trade Commission trial examiner hearing complaints of unfair trade practices, including the "give away" of refrigeration equipment, against nine large dairy firms will have the attorney's briefs from both sides in his hands.

After that a final decision in the long, drawn out case should be only months away.

In their briefs, the attorneys will sum up their arguments and submit proposed findings to Trial Examiner John Lewis for his consideration. Hearings, which extended over several years, came to a close last fall.

The hearing examiner's initial decision could come within

(Concluded on Page 29, Col. 5)

Knoxville Survey

Home Cooling Jobs Jump 15% In 1957

By C. Dale Mericle

KNOXVILLE, Tenn. — Sales of residential air conditioning gained 15% in the Knoxville metropolitan area during 1957 as compared with the previous year, it is revealed in a survey made by AIR CONDITIONING & REFRIGERATION NEWS.

There were 380 central cooling systems installed in homes here during the past season, as against 330 noted in the 1956 survey, which was described in detail in the Nov 5, 1956 issue of the NEWS.

The check of local dealers, contractors, and distributors, however, showed a number of weak spots. Only 11 of the 22 contractors listed in the 1957 survey chalked up gains over their 1956 sales. Five kept even with the board, but six ran short of their 1956 totals. Not included in the latter are two dealers who made a few sales

(Continued on Page 26, Col. 1)

Develops Low-Cost Year-Round System

SYRACUSE, N. Y.—Development of a low-cost method of year-round air conditioning for the home or small business building is announced by Carrier Corp.

At the same time, Carrier introduced a new line of heating units designed for use with natural, mixed, or liquified petroleum gases.

Both are being featured by the company at the home builders' show in Chicago.

The new method pairs a furnace and horizontal-type cooling unit to form a "Thermo-Center," a compact air conditioning system, it was explained.

"In basement applications, the cooling unit is connected to the heating unit through a window or other opening in the foundation wall," the announcement said. "A short duct to the plenum, an air mixing chamber on top of the heating unit, brings cool air into the duct system. Conditioned air is circulated through the house by the heating unit blower. A simple switch on the thermostat turns on cooling or heating as desired.

"For slab-type homes, the plenum is at the base of a downflow heating unit and similarly linked to the cooling unit."

Carrier's new heating unit, available in models ranging from 75,000 to 185,000 B.t.u., is readily adaptable for use in Thermo-Center application, it was pointed out.

"Inclusion of inexpensive

(Concluded on Page 29, Col. 1)

Financing the Store of Tomorrow

HOW FAR can the commercial distributor stretch the one-third rule for extending credit to customers? Milton I. Schwartz, executive vice president of S. & M. Schwartz & Co., New York City commercial distributorship, answers this question in part one of an article on financing which begins in the Commercial Section next week.

Williams Sells Inventories To Columbus Firm

Armstrong To Produce Heating, Cooling Lines

COLUMBUS, Ohio—National Union Electric Corp., parent of Armstrong Furnace Co. here, has announced purchase of the heating and air conditioning inventory of Eureka-Williams Corp., Bloomington, Ill., and addition of a new division, Williams Oil-O-Matic Heating Co.

All future production of Williams furnaces and air conditioners will be handled at Armstrong's plant here, said to be one of the largest of its kind in the world. NUE indicated this and other moves were made to broaden and diversify sales and manufacturing potential.

Separate sales divisions will be maintained to handle the two lines of furnaces and air conditioners. National distribution will be maintained through

(Concluded on Page 29, Col. 3)

Moves to Cleveland

Iron Fireman Purchases Timken Silent Automatic

CLEVELAND — The Timken Silent Automatic Div. of Scaife Co., Pittsburgh, has been acquired by Iron Fireman Mfg. Co. here, effective as of Jan. 1, 1958, it was announced recently.

Timken Div. manufactures and distributes residential heating equipment, including oil and gas-fired burners, furnaces, and boilers.

Iron Fireman also announced that headquarters of the Timken Div. will be moved here and that it will begin manufacture of the Timken Silent Automatic line of heating equipment at its Cleveland plants as soon as arrangements can be completed.

Lewis J. Cox, Iron Fireman

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Too Many Cooks Spoil the Broth (Too Many Dealers Ruin Profits?)

("Conscience of the Industry" Editorial By George F. Taubeneck)

EVERYONE knows that "the squeeze is on" in the home equipment business. There's far too much manufacturing capacity in existence today compared to present ability of the American public to absorb its products. (The 1960's may be another story.)

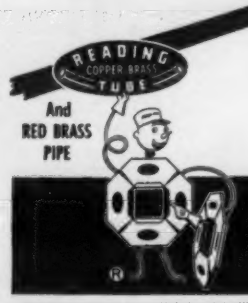
As a result, it is predicted freely that the so-called appliance business soon will concentrate like the automobile industry (only five or six primary producers). And the trend certainly seems to be in that direction. Lesser manufacturers are being absorbed by bigger, or giving up the ghost altogether. President James Skinner, Jr., of Philco Corp., gave credence to this situation in a report to stockholders recently.

In breathless succession came the RCA-Whirlpool-Seeger-Sears merger (and subsequent absorption of International

(Concluded on Page 14)

Know where you're heading . . . Insist upon READING!

READING COPPER TUBING truly trouble-free for Refrigeration & Air Conditioning Equipment



And RED BRASS PIPE

Made by Copper Tube SPECIALISTS

READING TUBE CORPORATION
EMPIRE STATE BUILDING NEW YORK 1, N. Y.
WORKS: READING, PA.

Tumbles Again

Slash Copper Price to 25¢ a Pound

NEW YORK CITY — When Kennecott Copper Corp., world's largest producer of the metal, slashed its U.S. price by two cents a pound to 25 cents and Phelps Dodge Corp. and Anaconda Co. met the cut, price of copper plunged to its lowest depth in almost five years.

This drop in producer price was quickly followed by a cut of a half-cent a pound to 24½ cents by custom smelters. Reduction was the first by major producers since Sept. 3.

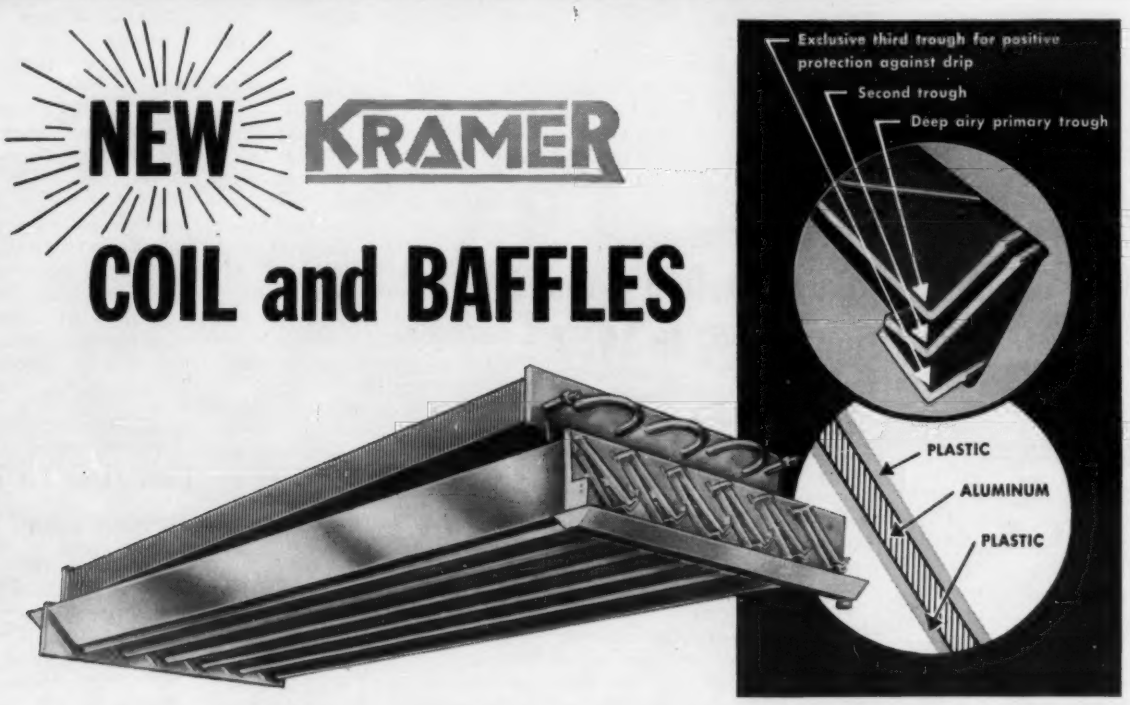
Announcement that Chile is curtailing copper production by 10% led the assault on the price structure. After the U.S. action, British copper price slumped to 21.68 cents a pound bid, a new low since free trading was resumed in London in 1953.

Back of the nearly two-year dip in the price of copper from its record high is a greatly increased productive capacity, accompanied by a drop in consumer demand, especially in the U.S.

Drop in the domestic producer price brought immediate cuts in price by brass and wire mills with quotations for pure copper products cut the full two cents a pound and cuts in brass and other copper alloys products in proportion to copper content. If the copper price averages 24 cents a pound for a calendar month, the U.S. import tax, suspended by law until June 30, becomes effective.

Principal Canadian producers followed suit and cut copper price 1¾ cents a pound to 24¾ cents.

NEW KRAMER COIL and BAFFLES



with attractive lifetime PLASTIC CLAD ALUMINUM at no extra cost!

Permanently Attractive Baffle—Constructed of a new plastic-clad aluminum which combines the strength and flexibility of aluminum with corrosion-resistant plastic for lifetime beauty. It will not chip, peel, corrode, sag, fade nor get brittle. It is absolutely odorless and sanitary. The coil with its colorful baffle will retain its attractive appearance for the life of the cooler.

Dripless Triple-Trough Design—The triple-trough—a unique Kramer feature—provides a deeper primary trough for unrestricted draftless circulation of cool air. The narrow third trough reduces dripping to a minimum, making the Kramer triple-trough baffle virtually drip-proof.

Easy to Install—Kramer coil and baffle combinations are completely assembled at the factory. Shipped in closed wooden cases, they arrive on the job clean and ready for installation, saving assembly and installation time.

Immediate Shipment—A complete range of 15 carefully selected sizes giving maximum Btu per dollar for every application are carried in stock for immediate shipment. Both left-hand and right-hand baffles are available.

WRITE FOR BULLETIN CBC-276C

KRAMER TRENTON CO. • Trenton 5, N.J.

44 YEARS OF CONTINUOUS ACHIEVEMENT IN HEAT TRANSFER

Home Gas Cooling

Utilities Top Hoped-For Goal by 50%, AGA Says; Symposiums Canceled

NEW YORK CITY — Hoped for utility commitments for this year for at least 4,600 direct-fired residential gas absorption air conditioning units have already passed this figure by over 50%, the American Gas Association announced.

Therefore, says AGA, this "enthusiastic support" makes it unnecessary to hold a series of seven symposiums scheduled by the air conditioning promotion committee for January and February around the nation.

Promotion committee is concentrating now on producing an effective "how-to-do-it" Plan Book of action for utility air conditioning programs. This book, "Steps To Success," will include material originally scheduled for the symposiums and data assembled by AGA Commercial and Industrial Air Conditioning subcommittee.

It will also contain economic studies on the importance of gas air conditioning, AGA said, and a new survey on "the low service cost of direct-fired gas absorption equipment."

An extensive advertising program on gas air conditioning has been scheduled this year. More than 40 full-page ads will appear in magazines.

Reach Terms To Halt 4-Mo. Century Strike

ST. LOUIS — A four-month-old strike at two Century Electric Co. plants here ended recently with 1,600 workers agreeing to terms with management.

A "considerable number" of employes were returned to work immediately and other employes were to be notified to come back as soon as additional production could be scheduled.

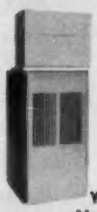
Members of striking Local 1108, AFL-CIO International Union of Electrical Workers, voted to accept terms of a contract effective to Oct. 2, 1959. An "immediate" eight-cent-an-hour wage increase was set with another raise of seven cents due Oct. 1 this year. Skilled employes get an additional five-cent-an-hour increase at once.

For more information about products advertised on this page use Information Center, page 20.

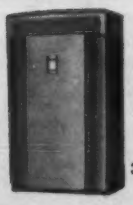
GENERAL ELECTRIC ANNOUNCES A FABULOUS, ALL-EXPENSE-PAID NASSAU HOLIDAY AND TREASURE HUNT

These are the products that can win you big profits and a glorious trip to Nassau

T. C. Packaged Cooling Unit



Year-Round Air Conditioners



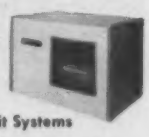
3-Ton Unit

30-Ton Unit

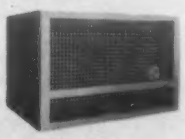
Floor-Mounted Air Conditioners — Air- and Water-Cooled

Ceiling-Mounted, Self-Contained Air Conditioners

Water-Cooled — Air-Cooled



Air-Cooled Split Systems



Weathertron all-electric heat pumps

- ***5 fun-packed days at Nassau's luxurious, air-conditioned Emerald Beach Hotel!***
- ***Swimming, deep-sea fishing, spear fishing in crystal clear waters—relaxing on Nassau's largest private beach—golf at the Bahamas Country Club!***
- ***Sightseeing in fringe-topped surreys—Picnic on world-famous Paradise Beach—Calypso party under tropical skies!***

Business is pleasure—business leads to pleasure—when you sell General Electric Air Conditioning Division products. And this year, big General Electric sales mean big profits for you PLUS sales points that will help you qualify for a fabulous trip to the Bahamas! Come November, and you'll be flying down to Nassau—to enjoy an unforgettable vacation. Five full days and all expenses paid!

This exciting sales contest is part of General Electric's "BLUEPRINT FOR LEADERSHIP"—the plan that helps you move way out front in sales and profits. Contest runs to May 31. Enter now—profit while you chalk up sales points!

WHO'S ELIGIBLE

(1) All current dealers of General Electric Air Conditioning Division products.

(2) All dealers who sign up for a General Electric Air Conditioning Division franchise *now*. And this can be YOU—if you contact your nearest General Electric Distributor or mail coupon today.

General Electric Co.,
Air Conditioning Division,
5 Lawrence St., Bloomfield, N. J.

I am interested in learning how I can earn a trip to Nassau by signing up with General Electric.

I am interested in residential heating and cooling ☐
I am interested in commercial and industrial air conditioning ☐
I am interested in both ☐

Name_____

Firm_____

Address_____

City_____ Zone____ State_____

Progress Is Our Most Important Product

GENERAL ELECTRIC

For more information about products advertised on this page use Information Center, page 20.

Develops Master Plan for

Packaged Air Conditioner Installations In Big Bldgs. To Bar Haphazard Placing

SYRACUSE, N. Y.—Development of a master plan for the systematic installation of packaged air conditioning in multistory buildings has been announced by Carrier Corp.

The plan, the "Multi-Weathermaker System," coordinates installation of individual weathermakers and "avoids haphazard equipment placement," according to the company.

"This plan has been developed to enable building owners to allow for the air conditioning of their properties without a large initial cash outlay," Russell Gray, Carrier vice president and general manager of the Unitary Equipment Div., said.

"The heart of the system—a utility core consisting of cooling tower, electrical, and water supply—is installed first. Then individual units are placed according to a master plan, perhaps over a period of years."

Gray also pointed out that the air conditioning may be included in the lease, on an optional basis, at an increase in rentals. This, he said, will result in more revenue to the owner.

Included in Carrier's master plan is the calculation of the building's total cooling requirements, location of the individual weathermakers, centralization of utility service, and the sequence of equipment placement.

Once the cooling tower and necessary utility core have been installed, the piping and wiring to the site of each Weathermaker is completed. Then the installation work may begin.

"Among the features of a Multi-Weathermaker system are a relatively low first cost, reduced costs, and ease of installation since equipment can be brought to its site by elevator rather than by expensive rigging," the announcement said.

"Operating costs are similarly reduced because each unit is turned on only when needed, and operating engineers are not required since individual controls are located in each office.

"The Weathermakers may be equipped with ducts as a central system, or may be used for direct cooling without ductwork."

Bulk of the equipment in the Multi-Weathermaker System consists of small self-contained air conditioners which can be amortized as much as 10% per year, yet equipment life is well over 20 years, Gray said.

D-H Boosts Sales Orders 27% In Last 4 Mos. of '57

LOS ANGELES—West Coast air conditioning manufacturer Drayer-Hanson, Div. of National-U.S. Radiator Corp., for the four-month period recently concluded, has increased sales orders booked by 26.9% over September, October, November, and December, 1956, the firm announced.

C. W. Pollock, manager of air conditioning and refrigeration, said the increase "is due to an expanded sales force, internally and in the field; vast improvements in factory flow processes which have put us in a stronger competitive position; and the spiraled acceptance of Drayer-Hanson products by key architect, engineer, and contractor groups."

Listed too was an upsurge of transactions in foreign markets.

D H. CRAWFORD

J. L. ROTH

C. W. EGBERT

R. O. BAIR

York Ups Crawford, Roth, Egbert, Bair

YORK, Pa.—Four managerial appointments were made here recently by York Corp., subsidiary of Borg-Warner Corp.

Named sales manager of commercial air conditioning was David H. Crawford. He will be responsible for sale of large factory-engineered and prepackaged air conditioning units.

John L. Roth was appointed manager of associate sales. He will direct activities of York Associates, the company's franchised representatives, in the sale of engineered machinery.

Charles W. Egbert has been named manager of applications and Robert O. Bair sales division controller.

Crawford joined York in 1947 as a student engineer and has since served as associate commercial engineer, senior sales staff engineer, and sales administrator. Roth joined the company in 1950 after seven years with General Electric Co. Egbert previously served as North Atlantic district sales manager for engineered refrigeration and air conditioning equipment. Bair formerly was controller of the midwest district.

Bohn Buys Plastray As Diversification

DETROIT—Douglas Jocelyn, president of Plastray Corp., and S. D. Den Uyl, president of Bohn Aluminum & Brass Corp., jointly announced that Bohn has acquired all of the outstanding stock of Plastray, manufacturer of plastic houseware.

Plastray distributes its own products in the United States. In Canada it distributes through its subsidiary, Plastray Co. (Canada) Ltd.

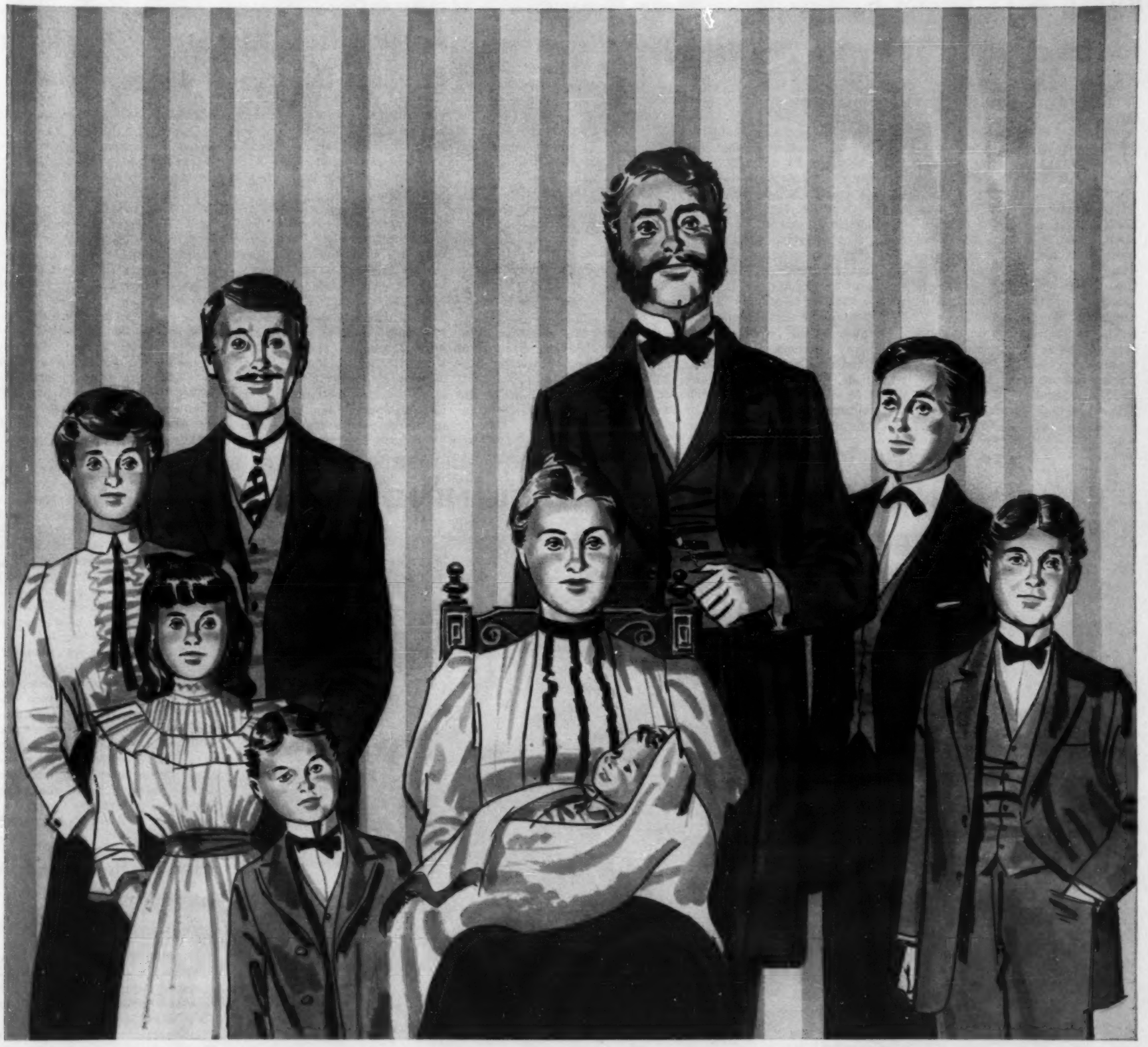
Plastray makes more than 80 different products such as ice cube trays, canister sets, refrigerator dishes, wastebaskets, etc. It also does custom molding for the refrigeration and automotive industries. The plant is at Walled Lake, Mich.

Den Uyl said the Bohn acquisition of Plastray is another step in a long range program of diversification. Plastray management will remain intact.

Jocelyn stated that the move brings the facilities of a multimillion dollar corporation behind Plastray and will enable the younger plastics company to expand production capacity, product lines, and research.

keep coolers
from freezing
32°
install
ALCO
Evaporator
Pressure
Regulators
Alco EPRs hold evaporator pressure to a predetermined level regardless of load changes. Prevents freeze-up and damage to water chillers and beverage coolers. Prevents dehumidification in vegetable and other produce cases.
THEY COME APART IN THE LINE FOR QUICK, EASY SERVICING
See your Alco wholesaler
ALCO
ALCO VALVE CO.
853 KINGSLAND AVE. • ST. LOUIS 5, MO.
The one complete line of refrigerant controls: Thermostatic Expansion Valves, Refrigerant Distributors, Solenoid Valves, Suction Line Regulators, Flooded Evaporator Controls and Reversing Valves.
BUY QUALITY • BUY ALCO
7306

For more information about products advertised on this page use Information Center, page 20.



FAMILY DOING VERY WELL . . . THANK YOU

Since we recently celebrated an anniversary, we've been asked how *our* family is doing.

The facts are that the thriving Bendix-Westinghouse "family" of compressors and condensing units is enjoying a lot of success.

More and more of the larger manufacturers and wholesalers in the air conditioning and refrigeration industry are switching to Bendix-Westinghouse. And, frankly, one big reason they're switching is that our satisfied customers are telling the industry these compressors "have what it takes".

Based on *their own* tests and field experience, these customers have proved our compressors the most consistently reliable in the industry. This is understandable, since a rigid quality control program is being aggressively maintained by our fine engineering and manufacturing organizations.

For the success we've been experiencing, our thanks. If you happen to be one of those who hasn't yet tried Bendix-Westinghouse, ask any of our customers what they think of our compressors. We know their answers will convince you that we should be considered as your source.

Bendix-Westinghouse

EVANSVILLE, IND.

A Division of Bendix-Westinghouse Automotive Air Brake Company, Elyria, Ohio—Export Sales: Bendix International, 205 E. 42nd St., New York 17, N. Y.

For more information about products advertised on this page use Information Center, page 20.

Kuwait Orders 1,500 Room Units For Operation on 50 Cycles, 240 Volts

AUBURN, N. Y.—The sale of "what purports to be the largest single order for room air conditioners ever placed by one export customer at one time" has been announced by the Air Conditioning Div. of Remington Corp.

The order was placed by the Electricity Dept. of the Government of Kuwait. It is for 1,500 room air conditioners especially designed for operation under the extreme climatic conditions existing in the Persian Gulf area, the firm said.

The units in question all use special hermetic compressors nominally rated at 1¾ hp. and having motors especially designed for operation on 50-cycle, 240-volt, single-phase current.

"Because of the unsatisfactory results obtained from standard 60-cycle units designed for domestic conditions, when operated in Kuwait, we have agreed with the Electricity Dept. to have the units in question tested by Lloyds of London, as they are being manufactured," said Herbert L. Laube, Remington president. "Not only that, but we have guaranteed that they will continue to cool satisfactorily with outdoor air temperatures as high as 122° F. with a substantial plus or minus variation in the supply voltage."

Because of the importance of its export business, Laube also stated that the same model would be made available generally to those of the company's distributors who are located in 50-cycle areas in the tropics.

Airtemp Names Wyckoff Vice Pres.

DAYTON—Paul W. Wyckoff has been named vice president in charge of engineering for Airtemp Div. of Chrysler Corp., it was announced recently.

P. W. Wyckoff

Wyckoff is a graduate of Wayne university and the University of Michigan. He joined Chrysler Corp. in 1939 as a graduate student in the Chrysler Institute of Engineering.

He began his affiliation with Airtemp in 1946 as director of the division's engineering laboratory. He was named assistant chief engineer in 1950 and in 1954 he was named chief engineer.

Service on Par with Sales

Agovino Heads New Service & Customer Relations Department at Fedders

MASPETH, N. Y.—A new department, Service & Customer Relations, has been established by Fedders-Quigan Corp. A. F. Agovino has been appointed its manager.

The department will take over the functions of what was formerly the service department with its personnel and operations considerably expanded.

Salvatore Giordano, Fedders president, announced the reorganization at a meeting of district servicemen at headquarters here. Plans for the new setup were outlined in detail for the district representatives.

Under the realignment, the new department has been placed in the corporate structure on a par with sales, and Agovino will be reporting directly to U. V. Muscio, executive vice president.

In addition to Agovino, other personnel changes were made: Fred Tiedeman has been named assistant manager of the department; Silvester Thompson has been named field service manager; John Russo has been appointed parts manager. All of these positions are new with the firm.

He indicated that the distributor was the key to an adequate service system and that an increased emphasis would be given by Fedders to the relations between the factory and the distributors. "In return, however, we expect the cooperation of every one of our distributors," he added.

Giordano made known that the physical facilities for the new department have been expanded over what was utilized by the former service department. Modern methods, such as a new type of parts packaging and conveyor automation, will be employed for greater efficiency, he indicated. Also, an expansion of the field service personnel is being planned.

Prior to his new appointment, Agovino was an assistant controller at Fedders. Tiedeman joined the Fedders service department two years ago. Thompson has been with Fedders for over two years as the southeastern regional service manager. Russo was previously operating manager for the New York branch of Butler Brothers, national wholesale and retail operator.

Portable Room Unit Introduced by Emerson Radio

JERSEY CITY, N. J.—A new portable air conditioner was introduced during the recent Emerson Radio & Phonograph Corp. distributor meeting by E. A. Tracey, vice president in charge of sales.

He said the room unit cools, heats, and dehumidifies; has variable air directional louvers; weighs 60 lbs., and operates on a 7½-amp., 115-volt circuit. It can be carried home and installed by the user "in minutes," he claimed, adding that "no tools are required, not even a screwdriver."

Additional features of the Emerson-Quiet Kool "Pick-Up" were listed as a newly-developed "Dynel," permanent washable filter with a "slide-out" design which permits the filter to be removed without removing the front or any other part of the air conditioner, and Emerson's "Jet Scoop" dehumidification which is said to eliminate drip.

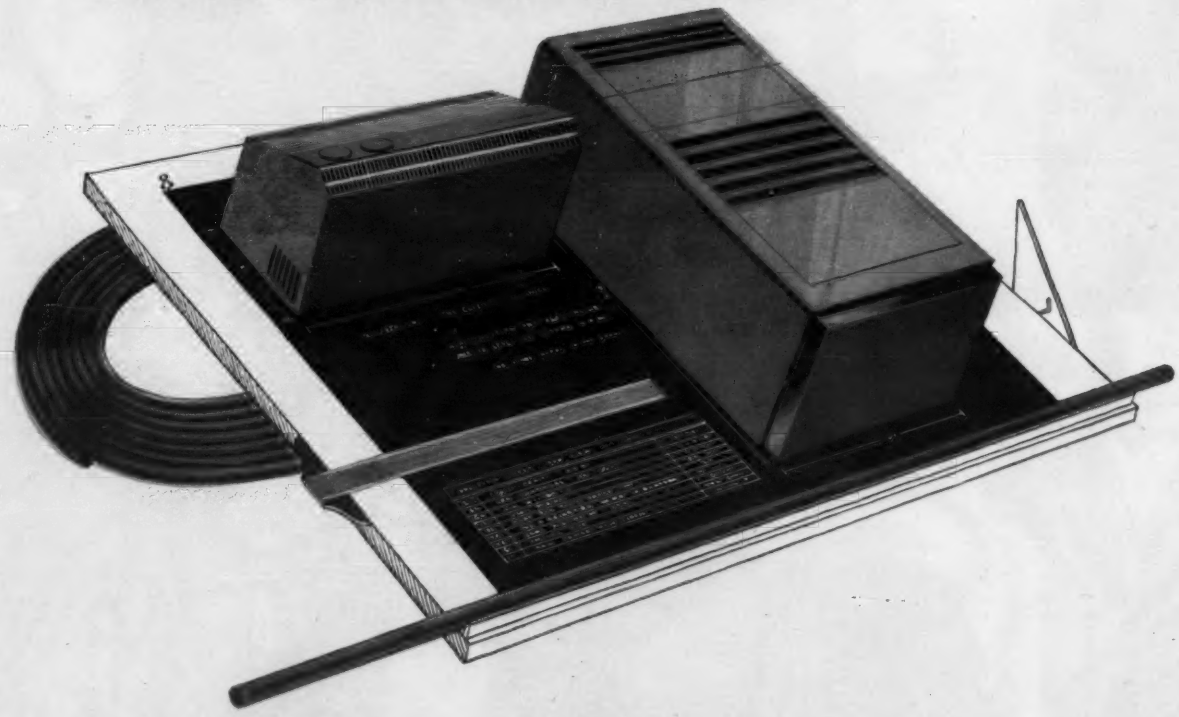
"Of major importance," Tracey stated, "is the Pick-Up's low cost."

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

Only 25¢ each.

For your REFRIGERATION, AIR CONDITIONING and HEATING UNIT NEEDS . . .



Specify Quality-Controlled

PHELPS DODGE COPPER TUBE!

- All tempers and sizes for use in original equipment.
- Straight length tube tempered to meet your bending and expanding specifications.
- Quality-controlled throughout manufacture to assure finest tube properties.
- Tubes degreased and capped, or dehydrated and sealed, if required.
- Deliveries geared to your production requirements.

First for Lasting Quality from Mine to Market!

PHELPS DODGE COPPER PRODUCTS CORPORATION

SALES OFFICES: Atlanta, Birmingham, Ala., Cambridge, Mass., Charlotte, Chicago, Cincinnati, Cleveland, Dallas, Detroit, Fort Wayne, Greensboro, N. C., Houston, Jacksonville, Kansas City, Mo., Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Philadelphia, Pittsburgh, Portland, Ore., Richmond, Rochester, N. Y., San Francisco, St. Louis, Seattle, Washington, D. C.

For more information about products advertised on this page use Information Center, page 20.

THE SWITCH IS ON!

Nationwide, installing contractors are discovering pay dirt in the Westinghouse Air Conditioning powerhouse sales plan.

Now, Westinghouse offers a potent three-pronged sales program that brings in sales profit for installing contractors. Here's what it does . . .

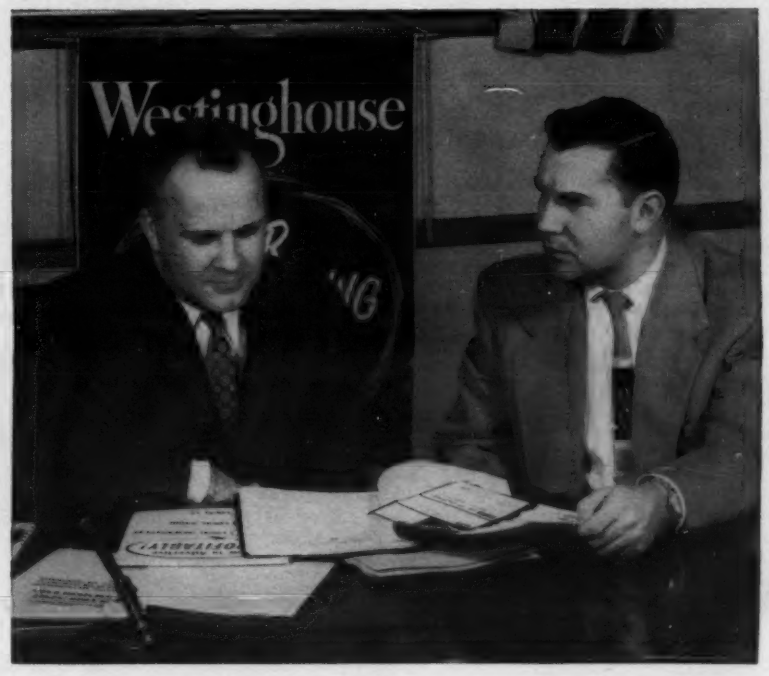
1. Makes people in your community want central air conditioning by telling them why they should want it.

2. Finds qualified prospects in *your* local market area.

3. Gives you proven tools to quickly convert these prospects into profitable sales.

The program is working now—even before the season. Here's what's happening . . .

E. G. Ferber, Manager of General Air Supply Company in Dayton, Ohio, tells us . . . "We're not waiting for hot weather. My dealers are qualifying prospects right now. We're getting set for a profitable year with Westinghouse . . . the most sales-minded manufacturer in the industry."



Mr. Harold Maunz, President of Delavan Heating Supply Company in Buffalo, New York, says, "We want to deal with a company that knows how to *sell* as well as manufacture. Westinghouse fills the bill. They have a top line of products. And a live-wire local selling plan that helps us move merchandise to buyers."

J-80558

BETTER CHECK

Some areas still have openings for aggressive contractors. Call any of these *seven men of action* for details.

Jim Reynolds	**Walt Hunken**	**Bob Haubold**	
Pittsburgh, Pa.	Staunton, Va.	Dallas, Texas	
EXpress 1-2800	STaunton 6-0711	RIverside 1-5109	
Milt Bevington	**Tom Mullen**	**Al McDonald**	**Bill Constance**
Atlanta, Ga.	Chicago, Ill.	St. Louis, Mo.	Los Angeles, Calif.
TRinity 4-1641	WHitehall 4-3860	GArfield 1-6911	RAymond 3-9071

IN AIR CONDITIONING, THE SWITCH IS TO

Westinghouse

Westinghouse Electric Corporation • Air Conditioning Division • Staunton, Virginia

For more information about products advertised on this page use Information Center, page 20.

Inside Dope

By GEORGE F. TAUBENECK

(Continued from Page 1, Col. 1)

Trenchant Analysis

Major appliance merchandising divides itself into several rather well-defined historical periods, Homer points out.

First came the era of "merchandising simplicity." That was the late "nineteens" and early 1920's when major electric appliances meant only refrigerators and an occasional electric range. The comparatively few manufacturers extant utilized established independent wholesalers who owned or controlled their own captive retail outlets.

Electric utilities next saw in these electricity-consuming refrigerators a great opportunity for load-building. Dealers found the utilities to be willing and natural allies—especially with their ready-made credit extension facilities, which enabled customers for refrigerators to pay instalments painlessly on their monthly utility bills.

By the middle 1930's, moreover, public utilities which themselves sold at retail represented 20% of the total refrigerator retail volume, and many of these utilities were doing outstanding jobs.

Hard-hitting, doorbell-pushing dealers really ruled the roost, however, from 1932 to 1942. These dealers concentrated on one brand, and they emphasized service. That was the "Glory Period" of refrigerator salesmanship.

And then came World War II.

Hitler Lowered the Boom

"Does anybody appreciate what happened to the home equipment industry during World War II?" asks Travis. Yep.

Prior to Pearl Harbor the refrigerator business had recruited and developed the greatest group of retail salesmen this world ever has known. Specialty selling was the order of the day.

And a lion's share of the credit for teaching the world how to sell the products of an expanding economy must go to the pioneering electric refrigerator industry of those exciting "Glory Days."

Dominant advantage for any given manufacturer rested with his acquisition of specialty dealers *spearheaded by a force of creative retail salesmen.*

And then: war, peace, and chaos.

"Pre-war specialty salesmen —and thousands of others with no experience whatsoever—saw a chance to make a killing simply by opening a store after World War II," observes Travis. And they did.

Most tragic casualty of all ensued thereupon—the death of creative selling caused by a dearth of creative salesmen. Sad results:

(1) Disappearance, through merger and withdrawal, of many independent manufacturers in the home equipment industry.

(2) Emergence of "discount house" wrecking crews.

(3) Rise of the factory distributing branch as against the independent distributor.

(4) Trend toward abandoning service functions on the part of dealers.

(5) Saturation on many devices.

(6) Flight from cities to suburbia—and subsequent mushrooming of the shopping center as opposed to downtown locations.

(7) Shift in emphasis from dealer specialty selling to mass pre-selling of the consumer (through national advertising).

Shrinking margins, rising costs of doing business, minuscule profits for even the best operators, and bankruptcy for many important segments of the industry has ensued.

Some Good Dealers Survive

"There still exists a hard core of strong, independent dealers with a power to move expensive home products far out of proportion to their numbers," insists wise Homer Travis.

"These dealers have met new crises and circumstances within our industry with imagination, resourcefulness, and the ability to adapt. They have cut out waste; they have honed their selling techniques; they have become better merchandisers."

Furthermore, they have coped successfully with the following postwar products:

Food freezers
Room air conditioners
Combination freezer-refrigerators
Residential air conditioning
Dehumidifiers
Quick-recovery water heaters
Automatic washer-dryers
Dishwashers

That a valiant few dealers have done this adjusting job successfully puts the spotlight squarely on that worst of World War II casualties—a dearth of the creative *retail* selling organizations which built our industry.

In other words, we all need many more such Big specialty dealerships.

Biggest Challenge of All

Can such a specialty-selling dealership structure be rebuilt on a nation-wide scale? If not, is there an alternative? Is there anything which can take the place of creative selling organizations?

"Say all you will about preselling, about super-saturating the public with brand-name advertising—and you still fall short of what *only* can be supplied by the *personal* ingredient

(Concluded on Page 10, Col. 1)

"our customers use

CALGON'S BIG 3 BY THE TRUCKLOAD"

says Bill Hauber, Marketing V.P. of Thermal Supply, Houston

Thermal Supply has the kind of hustle that it takes to keep pace with fast-growing Houston. Take their new, block-square building with its airy, spacious selling floor. Here Thermal's customers can inspect and choose materials and supplies with maximum convenience.

Prominently featured on this display floor and those of their other branches through Texas and Louisiana are Calgon's Big 3 cooling water treatment products. Thermal's customers have found the use of Calgon Scale Remover, Micromet Plates and Calgon Algaecide gets systems clean and keeps them clean. Maintenance and power costs are kept down, and *their* customers stay satisfied. Here's how they work:

CALGON* SCALE REMOVER makes it easy to clean up a system completely. Corrosion inhibitors protect system while in use. Special built-in pH color indicator shows how much of scale remover to use, and helps tell when system is clean.

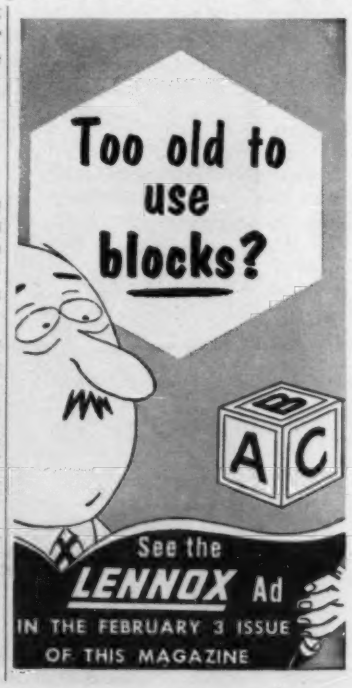
MICROMET* PLATES provide continuous treatment to inhibit further scale formation. A single charge will last about six months and the inexpensive feeding bag is easily installed.

CALGON* ALGAECIDE controls algae and slime growths. Positive action kills the growth. Periodic addition keeps equipment operating efficiently.

See your refrigeration wholesaler for Calgon's Big 3!

*T.M. Reg. U.S. Pat. Off.

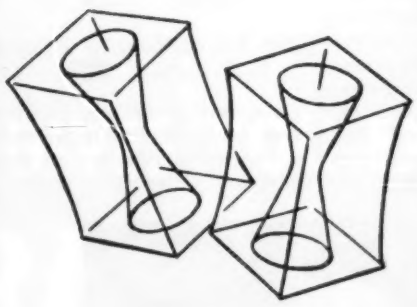
CALGON COMPANY
DIVISION OF HAGAN CHEMICALS & CONTROLS, INC.
HAGAN BUILDING, PITTSBURGH 30, PENNSYLVANIA
DIVISIONS: CALGON COMPANY, HALL LABORATORIES
IN CANADA: HAGAN CORPORATION (CANADA) LIMITED, TORONTO



For more information about products advertised on this page use Information Center, page 20.

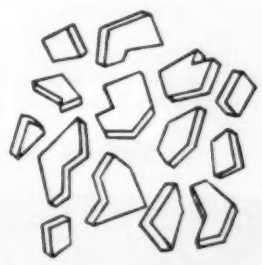
How do you want to sell ice machines?

A limited line, with "up to" capacity—or Carrier's full line, with Certified Capacity?



cubes

Carrier offers 5 models—
with Certified Capacity



crushed

Carrier offers 5 models—
with Certified Capacity

flakes

Carrier offers 3 models—
with Certified Capacity

chips

Carrier offers 2 models—
with Certified Capacity

Carrier offers the most complete line of ice machines on the market, to make the right kind of ice for the exact needs of every prospect.

Carrier lets you *certify* capacity *in writing* based upon real operating conditions. You furnish production figures determined on *local* air and water temperatures—not those found in some remote laboratory. You talk to a prospect in language he understands!

That adds up to Carrier's exclusive "one-two" sales closing punch. You won't find anything else like it. When you're backed by Carrier, you never have to say, "won't this ice do just as well?" You never have to say the capacity is "up to."

Take those words out of your vocabulary now by calling your Carrier Distributor. Or drop a line to Carrier Corporation, Syracuse, New York.

Carrier *air conditioning • refrigeration*

For more information about products advertised on this page use Information Center, page 20.

Inside Dope

By GEORGE F. TAUBENECK

(Concluded from Page 8, Col. 5)

of an enthusiastic salesman.

"Do everything you can to expose your product physically to a maximum number of people; build into that product all the so-called self-selling features you can—and you still fall short of what only sincere, informed, helpful, personal salesmanship can supply," confirms Homer Travis.

Where does the industry start on its come-back trail?

"You start at the local level, with a better understanding of what motivates the thinking and actions of those GOOD dealers and their customer-prospects with whom you work," declares Travis.

The National Appliance & Radio-TV Dealers Association recently completed its authoritative Cost-of-Doing-Business Survey for the year 1956. Since 1950, NARDA dealers have seen their profit ratio drop from 6.3% in 1950 to 1.2% in 1956—and 28% of those retailers reported 1956 operating losses. That 1.2% for 1956 was an 11-year low.

"Look at that dealer profit picture, if you will, from another angle," continues Travis. "To do business today, the dealer's profit per appliance unit sale is low, depressingly low. Whereas a few years ago one never heard of grosses being lower than 30%, today many dealers, to be competitive, are operating on literally a fraction of that percentage.

"Who's making the money in the distribution chain? Certainly not the manufacturer, as you've already seen. The wholesaler? On the contrary, he also is badly caught—so much so that his traditional margins have suffered as much as, if not more than, those of the dealer."

Profit Incubator—Small Towns

What can be done? Well, there is a Profit Incubator in America's small towns. For the home equipment business this PI affords hope of revival.

"Specifically the type of appliance retailer in rural and small city areas is small, not only in business volume but also in manpower and facilities. He does not have the skilled or specialized merchandising help available to the big-volume stores in the big cities," probes Homer.

"Chances are, also, that many of his suppliers do not contact him or provide him with promotional guidance and sales training assistance nearly as often as they do the major-market retailers. Nevertheless, this dealer has remained LOYAL, and is *sound*.

Despite his problems that rural or small-town retailer is *not* a Vanishing American. Be he an independent operator or part of a retail chain he provides a basically important service, and he does business decently, in contrast to big-city wheel-and-dealers.

In rural and small-city dealers we now find the nucleus for revival of a specialty-selling dealer body. You see, *they* never lost the habit of personal salesmanship, and SERVICE.

Furthermore, they retain brand loyalty.

Air Conditioning Dealers Interesting, Too

Another potent source of the type dealer the appliance industry needs today is the air conditioning contractor. This air conditioning specialist is an interesting fellow. He has to *sell* a pioneering product, and *service* it. He's in the position household and commercial refrigeration dealers were 20 years ago.

Maybe he is another key to rejuvenation of the creative salesmanship which the home equipment field needs.

Everything the major home appliance business has done in recent years to step up volume seems to have turned out badly.

Why, then, shouldn't home equipment producers return to the fundamentals which built their business in the first place? Namely:

(1) Fewer and better dealers, with room for each to profit;

(2) Re-emphasis on service;

(3) Creative salesmanship, as opposed to discounting;

(4) Brand loyalty, which leads to customer loyalty;

(5) Dealer-specialists who concentrate on *major* home equipment.

Chavez, Simons Named To New Gibson Posts

GREENVILLE, Mich. — Appointment of C. R. "Bud" Simons as manager of food freezer sales and Milo Chavez as national sales manager of room air conditioners and dehumidifiers has been announced by W. C. Conley, vice president in charge of sales, Gibson Refrigerator Co., Div. of Hupp Corp. Both posts are newly created.

Milo Chavez

Gibson freezer sales were formerly combined in one department with room air conditioners. Simons, who has been directly engaged in sales work in the freezer business for a number of years, was most recently assistant manager of this department.

Chavez was formerly a sales executive with Fedders-Quigan Corp. and previously held sales positions in the key account and distributor field in Washington, D. C. In his new position he will work with distributors throughout the country and report to the manager of room air conditioner and dehumidifier sales, J. F. Klintworth.

A CHAIN REACTION—one sale leads to another when users experience the twin advantages of H&M's Water-Cooled Condensers—peak efficiency and lowest maintenance.

Double-tube design and counterflow introduction of water and refrigerant assure most efficient heat transfer. Refrigerant flows through the outer tube and the water through the inner tube for maximum heat interchange.

Removable headers permit easy water tube cleaning with a simple, accessory cleaning tool. Scale and sludge which reduce heat transfer are removed without harmful chemical cleaners. Condenser capacity is maintained at clean-tube performance ratings for unit lifetime.

Condenser compactness makes these units ideal for conversion of under-capacity air-cooled refrigeration systems. All H&M units are U/L approved for use with refrigerants -12 or -22.

Call your wholesaler or write *Halstead & Mitchell, Bessemer Building, Pittsburgh 22, Pa.*

ONLY HALSTEAD & MITCHELL OFFERS THIS WIDE CHOICE

HEAVY DUTY (Type T) condensers have a highly favorable fouling factor and are designed for long service between cleanings. ⅓ through 25 tons.

STANDARD DUTY (Type EL) are made with extended surface water tubes, ideal for water-cooled systems under all average conditions. ⅓ through 3 tons.

REPLACEMENT CONDENSERS (Type R) are shorter, higher condensers designed for use in package air conditioners. Easily installed. 1½ through 10 tons.

SEA WATER CONDENSERS (Type SW) are made with cupro-nickel water tubes and naval brass headers for resistance to impure water. ⅓ through 25 tons.

HM Halstead & Mitchell

Filtrine
"Taste Master"
PURIFIERS
for
WATER - COOLERS ICE MAKERS
Stop
. . . rust, dirt chlorine taste
. . . service breakdowns due to rust & sludge
Insures service satisfaction for all coolers, ice-makers! Clear, taste-free water . . . crystal ice . . . every day . . . in all locations.
FILTRINE MFG COMPANY
218 W. PROSPECT ST. • WALDWICK, N. J.

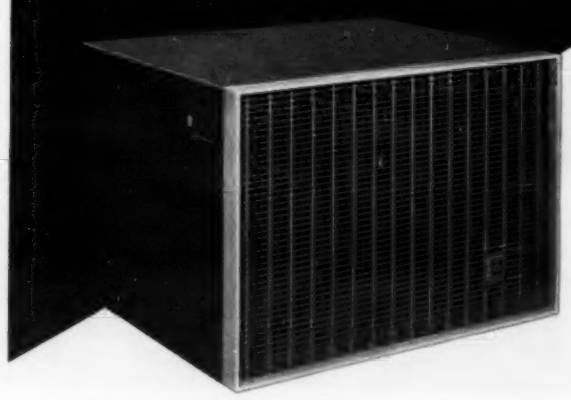
For more information about products advertised on this page use Information Center, page 20.

Nationally known ... accepted ... and "most-wanted" brand name

RCA Whirlpool

...NOW GIVES YOU EXTRA POWER IN SELLING

CENTRAL AIR CONDITIONING



A COMPLETE, PROVEN LINE OF AIR-COOLED CENTRAL UNITS ENGINEERED FOR SIMPLE, EASY INSTALLATION IN EXISTING AND NEW HOMES.

Put the proven power of the RCA WHIRLPOOL brand name to work selling for you. It's a brand name that moves merchandise because your prospects know it, trust it, and buy it readily. There's proven profit, too, in RCA WHIRLPOOL central air conditioners . . . because you have a full line to meet prospects' requirements . . . you have a flexible line that adapts to every type of home and need . . . and, most important, you have a profit line that's engineered so two men can make an average installation in as little as eight hours.

If you're looking for a better way to profit in the central air conditioning business . . . it will pay you to look to RCA WHIRLPOOL central air conditioners now!

2 HP. SELF-CONTAINED UNITS

A complete system in one unit . . . for use where space is a factor but high capacity is required. Air cooled . . . installation is fast and easy.

SEPARATE REFRIGERATION AND COIL BLOWER UNITS

. . . for systems from 2 to 5 hp. Where cooling requirements are greater these units may be installed close-coupled or refrigeration unit may be placed in a remote location, inside or outside as required.

COOLING COIL UNITS

Available in horizontal or vertical styles . . . designed for simple, adaptable field installation in all types of furnaces.

FREE luxurious, expense-paid fun-filled trips to Las Vegas

. . . just for buying RCA WHIRLPOOL central air conditioners. Ask your RCA WHIRLPOOL distributor about it!

MAIL THIS COUPON NOW FOR COMPLETE INFORMATION.

SALES MANAGER, CENTRAL AIR CONDITIONING DIVISION
WHIRLPOOL CORPORATION, Box ACN-1, St. Joseph, Michigan.

I am interested in knowing more about RCA WHIRLPOOL central air conditioners. Please send me complete information.

NAME_____

FIRM NAME_____

ADDRESS_____

CITY & ZONE_____ STATE_____

RCA WHIRLPOOL Home Appliances...Products of WHIRLPOOL CORPORATION St. Joseph, Michigan.

Join up!...it's easier to sell RCA WHIRLPOOL than sell against it!

Use of trademarks and RCA authorized by trademark owner Radio Corporation of America

For more information about products advertised on this page use Information Center, page 20.

'Heating Contractor's Role Important'

House Orientation, Thermostat Placement, Zone Control, Adequate Insulation Seen as Needed To Halve Heating Costs

"Get a wide-awake, progressive heating dealer."

"As many as 80% of all warm air furnaces are either too large or too small for the house in which they are installed."

These are some of the findings and recommendations included in an exceptionally well-written article on heating costs which appeared in a recent issue of *House & Garden*. Entitled "How to Cut Your Heating Bills in Half," the article by Arthur M. Watkins reports in detail the findings of several studies and surveys.

The combined results of the several investigations reveal that by such things as proper orientation of the house relative to winds and sun, the correct placement of thermostats, engineered zone control, and adequate insulation, it is possible to cut heating costs in half.

Heat for $83 a Year In Low-Temp Zone

As examples the *House & Garden* article cites a large one-and-a-half-story house in Toronto with about 2,000 sq. ft. of living area which is heated for $122 per year, compared to $250 a year for similar houses in the area; a group of $15,000 to $20,000 houses in Minneapolis, where temperatures may drop to 30° below zero, are heated for as little as $83 per year.

Calculate Heat Loss per Room

The role of the heating contractor in obtaining such pleasing results is extremely important, the article points out. The author warns against the fast talking salesman who looks at a house or at building plans and, in five minutes, comes up with "just the right heating system for you." Heat loss calculations should be conducted room by room before a system is recommended.

One example of an oversized heating unit was found in Fort Worth. While the actual installation was very well handled, the furnace was actually 50% too large for the house. As a result, the air supplied to the rooms was too hot, and it was impossible to maintain even heating.

The article points out that heating people have changed their thinking about the operation of warm air furnaces. The former practice was to set the furnace to supply air as hot as 200°. The furnace was allowed to stay on for 20 minutes, then off for an equal length of time. This resulted in uneven heating.

'Cycle Furnace More Frequently'

The newer approach is to cycle the furnace more frequently and to set controls so that air to the house is never supplied at more than 160°. The blower is slowed down to run much of the time in mild weather, and most of the time in cold weather. This technique results in "comfort air circulation" and even heat.

Define Comfort Differently

In discussing comfort, the *House & Garden* article reports the difference of opinion relative to defining comfort. One group holds that the test of a good system is the temperature it keeps. Using figures, they say the temperature from room to room should never differ more than 4°; the temperature difference between the floor and ceiling should never be more than 5 or 8°; the floor should never be cooler than 65°; and the room air at thermostat level should stay between 73 and 77°.

Another group, says Watkins, holds that "checking temperatures throughout a house may be fine recreation if you possess the necessary gear and have the required patience." Such figures, they hold, do not give you such important information as the body heat loss or the coldness of a wall.

The important test of comfort, this second group feels, is how warm the occupants feel. They are most comfortable when they are actually unaware of chills, drafts, and the like, and when they do not find it necessary even to think about the heating.

'True Comfort Needs Zone Control'

True comfort requires zoned control, especially in larger houses, the article points out. One survey found that in houses costing more than $30,000 nine out of 10 needed two or more thermostats or else a split heating system with one unit for the living areas of the house and another for the sleeping zone.

The need for zoned control is not so great in lower-priced homes chiefly because it is only the more expensive homes that generally have a "spread out floor plan." Other homes will have finished basements and rooms over garages—the two most common causes of heating problems in split level houses.

Change Practices In Hydronics

The wet heat industry has also made changes in some of its older practices and concepts, says the article. As a result of an intensive research program launched several years ago, the Institute of Boiler and Radiator

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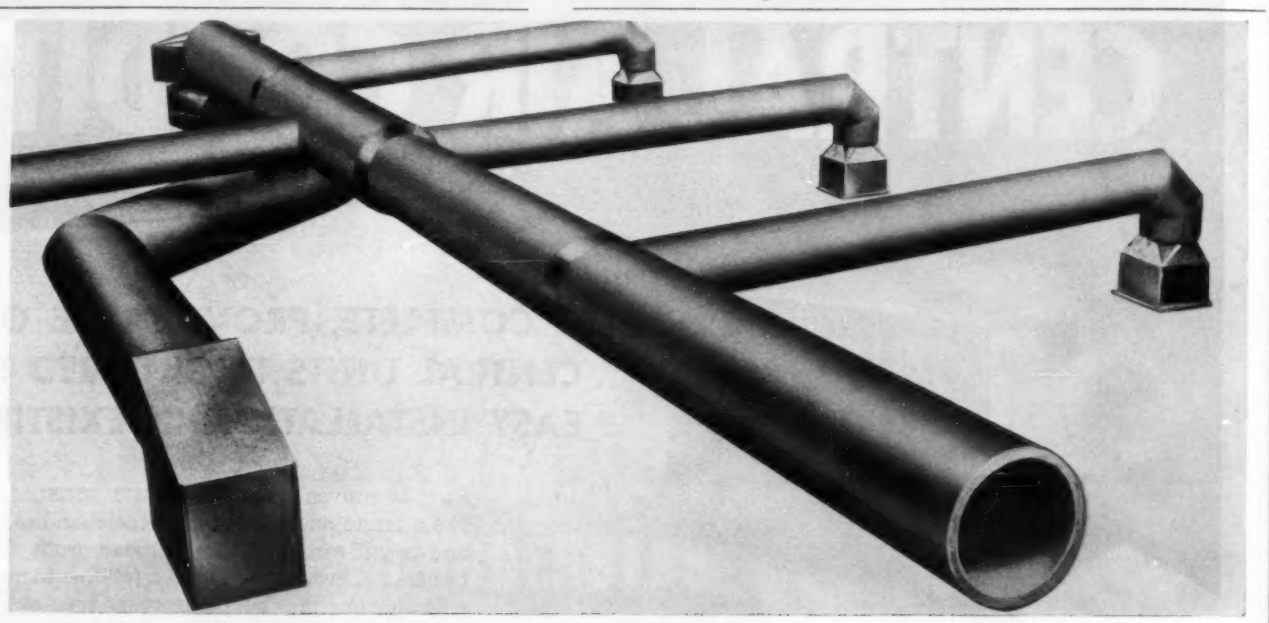


In new prefabricated G-B Duct, thermal insulation, sound absorption, and vapor barrier are "built in". Walls are molded of glass fibers and encased in air-tight plastic vapor barrier. Walls are uniform in thickness and density.

New prefabricated Glass Fiber Duct

An efficient air duct combining thermal insulation, sound absorber and vapor barrier, new "G-B Duct" offers positive performance with foolproof installation

Here's a new prefabricated duct with so many advantages for dealer and customer that it has been approved by leading manufacturers of residential air conditioning!

It's G-B Duct—the first prefabricated round air duct of glass fibers, encased in an air-tight plastic vapor barrier.

It provides *positive thermal insulation* because the walls are made of especially efficient glass fiber insulation, and because wall thickness and density are *uniform*.

It is an excellent sound absorber—a 6-foot length of G-B Duct reduces the loudness level of duct noise by more than 50%!

It effectively prevents condensation because it has a "built-in" vapor barrier.

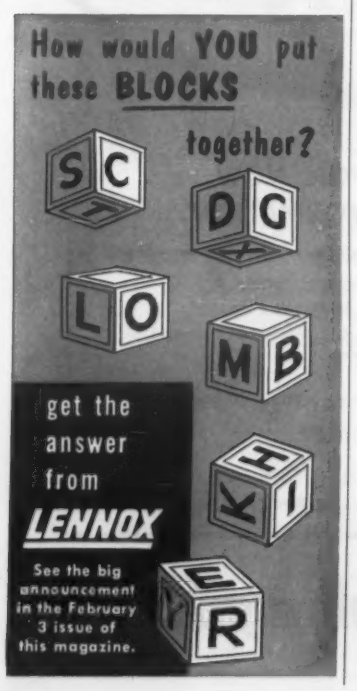
It is a highly efficient air duct—air friction factors, for all practical purposes, can be considered the same as for sheet metal pipe in residential applications.

G-B Duct comes ready to use—no pre-assembly, no folding. Because it comes in 6-foot lengths, there are fewer joints to seal—no longitudinal seams or flaps to glue or staple.

EASY, ECONOMICAL INSTALLATION

Positive performance features have been heartily welcomed by manufacturers and dealers alike—but equally pleasing are the easy installation characteristics that make for economical, foolproof installation that assures a perfect job in those hard-to-reach places. G-B Duct comes in one-piece, 6-foot sections, ready-to-use—no pre-assembly, no folding. Because there are no longitudinal flaps or seams, no messy adhesives and no drying time are involved. Templates are provided, and G-B Duct can easily be cut and fitted with a knife. Sheet metal collars and connections are readily available.

System design is completely flexible and sizing is no problem with G-B Duct because it is made to the


How would YOU put these BLOCKS together?
get the answer from
LENNOX
See the big announcement in the February 3 issue of this magazine.

For more information about products advertised on this page use Information Center, page 20.

Importance of Heating Contractor--

(Concluded from preceding page)
Manufacturers reports that hot water heating prices are now as much as 40% lower than they used to be.

Smaller boilers, streamlined radiators and convectors, low-cost snow melting systems operating off the same boiler that heats the house, are some of the tangible results of the research program.

In discussing wet heat, the article points out that the purchaser should be sure the boiler has the IBR rating stamp if it is a cast iron boiler; it should have the SBI (Steel Boiler Institute) stamp if it is a steel boiler.

Check List for Good System

The *House & Garden* piece offers a check list to the purchaser which is of direct interest to the heating contractor. Among the items to be considered in choosing a heating system are:

A good heating dealer. "This point cannot be overemphasized," the author points out. Use a progressive, wide-awake man who knows about new ideas in heating.

Get the right capacity heater for your specific needs. Have the heat loss accurately estimated.

Get good equipment with well established manufacturers standing behind it.

Poor Installations Traced To Ductwork

About nine out of ten faulty warm air installations can be traced to bad ductwork. Every duct system should conform to design standards of the National Warm Air Heating and Air Conditioning Association. If air conditioning is to be added later, ducts should be larger than for heating alone.

Get the right heating control system. Consider whether two or more thermostats are needed. As an example, a house with a radiant floor slab should also have an outside anticipator.

In building a new house, take advantage of natural winter sun heat, use windbreaks, insulate according to the newer findings which indicate that two or three times the former insulation is desirable.

Seeks Materials, Outlets For Activated Charcoal

COLUMBUS, Ohio—Dr. O. L. Barnebey, founder and president of Barnebey-Cheney Co. here, is currently touring the southern and western United States and some Caribbean Islands seeking sources of raw material and marketing outlets for his firm's activated charcoal.

Astronautics Plant

63 Air Handling Units To Heat, Ventilate ICBM Engineering Complex

SAN DIEGO, Calif. — Sixty-three Drayer-Hanson air handling units (HH Series and BT "Specials") soon will be installed in the Engineering complex of the Astronautics Div. of Convair, now under construction near here.

Project is the new $40 million home for the "Atlas" ICBM.

The Pereira & Luckman designed and engineered eight-building complex will initially provide administrative, engineering, research and development, and production facilities for 7,000 employes. Project is high geared to design and produce the Atlas ICBM and related products.

Drayer-Hanson equipment to be installed will initially provide heating and ventilating. It will readily convert to handle complete cooling, at a subsequent date, according to the manufacturer.

"Forty-eight individually mounted units are ceiling suspended in concealed, furred-down areas," the announcement said. "All are single zoned to each wing or part of a wing which evolves in a central-hall waffle pattern. Balance of equipment (BT) is multizone type, which utilizes inverted fan operating on blow-thru principle."

The 210-acre Convair Astronautics site has been designed to attract the nation's top scientific research and engineering talent, it was noted. Three types of workable space will further the company's primary mission: a multi-story building, a one-story building, and specialized production areas.

Contract negotiations for Drayer-Hanson's equipment on the job were handled by its local area sales agent, Air Conditioning Supply Co., here; Gordon Paxon and Lee Sandahl, sales engineers. McNeil Construction Co. is project general contractor; heating and ventilating contractor: Climate Conditioning Corp.

'Alter Course'

Sees Housing Slowdown, Launches Furnace Replacement Campaign

COLUMBUS, Ohio—A foreseeable slowdown in new housing starts in the next few years has caused a change in business direction for many dealers, wholesalers, and producers.

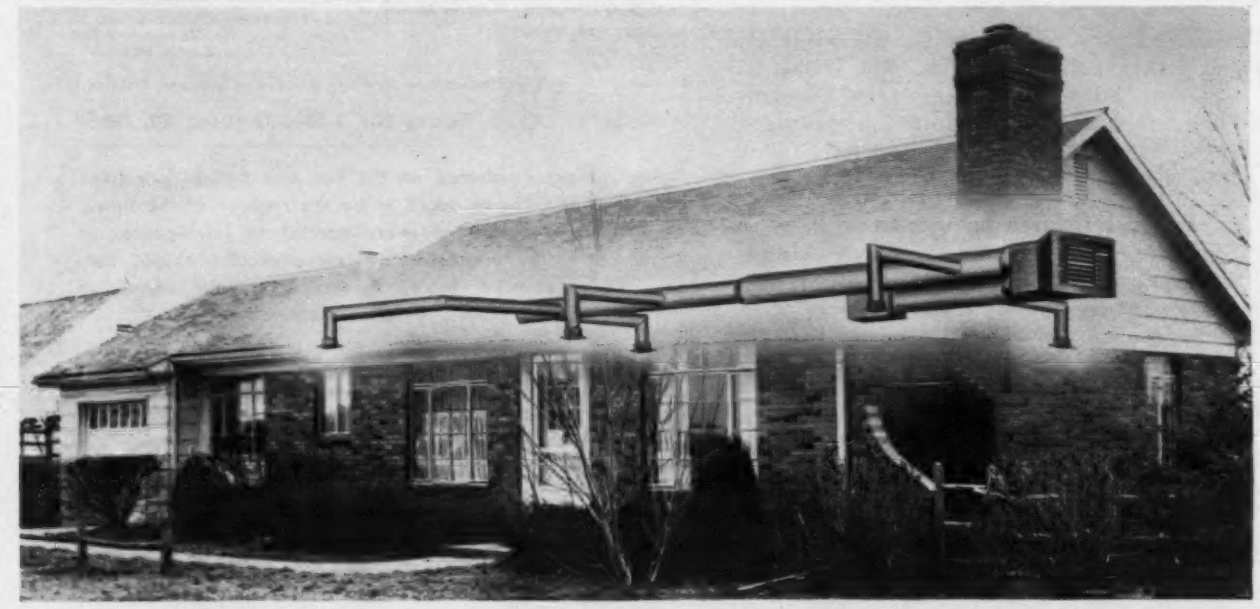
So said Armstrong Furnace Co. in reporting that it has launched a new program aimed at capturing a bigger share of the replacement market.

The promotional campaign is called "The Old Home Stretch." Proper use of this program "will get dealers into more and more basements to inspect old, and many times, worn out heating systems.

"Just how much of a potential market there is for replacement business is borne out by the fact that 60 to 70% of all homes in the U. S. were built prior to 1945," it was pointed out. "A great percentage of these homes need new heating systems."

High point of "The Old Home Stretch" is the dealers' offer of a free six point safety and efficiency check on a furnace. As an added incentive to induce homeowners to have their furnaces inspected, a gift will be presented to each homeowner who requests a "Six Point Check," a thermometer-hygrometer which registers both temperature and humidity.

Other features of the promotion are a series of newspaper advertisements, radio and TV commercials, a direct mail campaign of four cartoon folders, letters and return postcards. All of these media tell one story: the need of a six point safety and efficiency check up for all furnaces.



New G-B Duct, made to same nominal sizes as sheet metal pipe, permits complete design flexibility. Approved for residential use by local building codes. G-B Duct also meets the requirements for FHA insured loans.

for residential air conditioning

same nominal sizes as round sheet metal pipe and fittings. Hence no special calculations are required—if design calls for 6" sheet metal pipe, installer simply substitutes 6" G-B Duct.

For all these reasons, anyone can do a professional installation job without special tools, without practice or experience—and in a minimum of time. Cost studies indicate that dealers save time and money on original installations, and eliminate "call-backs" that can take all the profit out of a job.

NEW DUCT HAS MANY USES

The versatility of G-B Duct makes it applicable to every residential heating and air conditioning installation. It is used as the entire duct system for the popular self-contained unit installations in attics and crawl spaces. It is also used as run-outs in conjunction with sheet metal main supply ducts. And where insulation of the duct system is not required, a 6-foot section of G-B Duct is installed adjacent to the diffusers for a positive and efficient sound trap.

WINS READY APPROVAL

G-B Duct has been approved by leading manufacturers of air conditioning equipment because it helps build more satisfied customers—and more satisfactory profits—for their dealers. It is listed by Underwriters' Laboratories and approved by local building codes. Construction with G-B Duct meets the requirements for FHA insured loans.

STOCKED BY WHOLESALERS

G-B Duct is being stocked by heating and air conditioning supply houses and franchised distributors of Gustin-Bacon products. Because it is light, tough and rigid, yet flexible, it is easy to handle and store without fear of breakage.

Fittings are easily fabricated on the job with a knife and factory-supplied templates.

FOR MORE INFORMATION, SEE YOUR LOCAL SUPPLIER OR WRITE TODAY FOR SAMPLES, PRICES, AND COMPLETE TECHNICAL DATA!

GUSTIN-BACON Manufacturing Company

218 W. 10TH ST., KANSAS CITY, MO.

Thermal and acoustical glass fiber insulations • Pipe coverings and fittings • Molded glass fiber pipe insulation

GUSTIN gb BACON

AN INTERNATIONAL INSTITUTION • SUBSCRIBERS ALL OVER THE WORLD

Trade Mark reg. U.S. Pat. Office; Est. 1926

AIR CONDITIONING & REFRIGERATION NEWS

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F. M. COCKRELL, *Founder*

'The Conscience of the Industry'

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"A newspaper conducted on the true and natural principles of such a publication ought to be the register of the times, and faithful recorder of every species of intelligence. It ought not to be engrossed by any particular object, but, like a well-covered table, it should contain something suited to every palate."—*John Walker.*

TRIPLE FE
HORROR SU
THEY'RE THE SALESMEN WHO ARE SUPPOSED TO BE OUT RINGING DOORBELLS··· THERE'S NOT ENOUGH MOVIES TO TAKE CARE OF 'EM!
THERE WAS A FIRE IN THERE ONCE··EIGHTY-FIVE BRIEF CASES WERE LEFT BEHIND··
BUT WHAT'LL THEY DO IN THE AFTERNOON? THE BURLYCUE SHOWS ARE ALL CLOSED DOWN···
THEY LOOK MORE MYSTERIOUS THAN THE GOONS ON THE SCREEN!
EARLY SHOW
COMING
TODAY
GLIMPSING THE HIGH-POWERED SALESMEN AS THEY LINE UP FOR A LITTLE SHUT-EYE···
JIMMY HATLO
JIMMY HATLO'S TIP TO GEO. FINEBERG, CHICAGO, ILL.

They'll Do It Every Time

by Jimmy Hatlo

Too Many Cooks Spoil the Broth (Too Many Dealers Ruin Profits?)

(Concluded from Page 1)

Harvester's refrigeration division), Kelvinator took over ABC, Amana absorbed Deepfreeze, Avco abandoned Crosley, Coolerator and many other former Big Factors in the Business gave up, etc., etc.

Meanwhile a PHENOMENON has occurred. What happened to all the Deepfreeze, Crosley, International Harvester, Coolerator, ABC, Thor, etc. dealers? *Answer:* they sank without a trace.

Erroneously each manufacturer which merged with, bought out, or helped push to the wall a competitor assumed that thousands of new dealers would be added to its lists. This didn't occur, for three reasons:

(1) Most of the dealers affiliated with defunct manufacturers were multiple-line dealers, and happily dropped one or two to lessen their inventory problems.

(2) An astounding number of dealers carried on the lists of the absorbed or defunct manufacturers were marginal retailers (pawnshops, jewelry stores, filling stations, chain groceries, and the like) which were unsuitable for merchandising major appliances.

(3) Many of the best and most financially responsible dealers were fed up with the appliance rat-race, and abandoned it when given an "out."

Probably it is true that consolidation of "home automation" production facilities into the hands of half a dozen giants will rationalize the so-called appliance business. At the same time it will expose a gigantic fallacy, to wit:

All dealers are alike.

Actually, there are several types, two of which are:

(1) *Major dealers*—who concentrate on the "big ticket" items. They are the 12% who do 80% of the business on residential appliances which cost more than $200. Probably they don't number more than 8,500. (Some say 4,000 would be more like it.) They're the Big Dealers who can sell and install residential air conditioning, complete kitchens, etc.

(2) *Fringe dealers*—who sell everything remotely classified as an appliance (roasters and toasters, radios and clocks, bedlamps and bedwarmers) but who cut little ice in the major appliance sales race. There may be 60,000 of these.

When there were too many appliance manufacturers, obviously there had to be too many appliance dealers. The latter, to survive, had to cut prices, they thought. And "fringe manufacturers" encouraged them. Worse, substantial dealers have fallen into the same trap.

Ruthless fighting for volume has got to the point where practically nobody—manufacturer, distributor, or dealer—is making enough money to stay alive for long, or to make needed provision for future growth. Furthermore, the profit picture looks so grim that many of the best dealers and distributors either are getting out of the business, or thinking bleakly about abandoning it soon unless its tenor changes tune. What price volume at any price?

Business growth is worthwhile only if it provides opportunities and possibilities for better times in years to come. With continually shrinking margins, dependence on "the deal" and wheel-and-dealing, what's the future for dealers? What opportunities can they forsee for themselves? How can the appliance industry attract the young men and women it needs to perpetuate itself?

Glibly the argument has been proposed that "we have to broaden the base of the market" by pushing prices downward. Assumption is that lower prices will bring more buyers into dealer stores automatically. Now we ask anyone: How has this broaden-the-base theory worked out for refrigerators, freezers, ranges, or room air conditioners in the last few years? Their over-all sales have plummeted during this turbulent era of chaotic price cutting. Will someone please tell us: How has the base of the market been broadened, and by whom? When and where?

Most of the local advertising you see is of the "Fire Sale," "Going Out of Business Sale," "Lost Our Lease Sale," type. All home equipment merchandising pressure is downward toward cut prices, discounts, and deals—rather than upward toward customer satisfaction and pride of possession.

That attitude runs contrary to everything which astute marketers, economists, and just plain reporters are observing about modern consumer attitudes nowadays. People are in an upgrading mood. They are bolstering their egos by purchasing higher-cost products.

Automobile people know that, and act accordingly. They're loading their products UP with extras, not stripping them down to slashed prices.

Bigger homes are easier to sell today. The Labor Department estimates that the average size of new homes in 1956 rose to 1,230 sq. ft., an increase of 6% over 1955. "For years builders have been building a minimum home," states the *Wall Street Journal.* "Now people want more room and more freedom. They are willing to pay more if they can get something they want."

Marketers of clothing, vacations, hobby stuff, jewelry, recreation devices, fancy foods, knicknacks, and gadgets sense the Temper of the Times, too. They're selling trips to the Caribbean, mink jackets for pet dogs, Bermuda shorts, hi-fi sound equipment and records, outdoor swimming pools—anything and everything to help the Public indulge its desire for "setting a better dining table." People feel better when they buy better.

Home equipment salesmen apparently have missed this point entirely. They're still advertising low price, cheaper products, discounts, deals . . . instead of advantaging the public mood for luxury and pride of possession. We repeat: People in this industry are running their businesses as if they're going out of business.

Let's wake UP.

Handy Way to Subscribe

To See the Industry In Action EVERY WEEK

Keep up-to-date on what's going on in your industry. You'll see action weekly in AIR CONDITIONING & REFRIGERATION NEWS. Covers latest news and gives you top how-to-do-it reports on commercial and residential air conditioning, heating, commercial and home refrigeration: manufacturing, contracting, distributing, retailing, and servicing. Read the Industry's newspaper for profit every week. Only $6.00 per year, 52 issues (U.S. and Canada). Foreign: $10.00 per year.

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Send the NEWS every week for: ☐ One Year $6. ☐ Three Years $12.
☐ Payment Enclosed ☐ Bill Me ☐ Bill Company

Name.....
Company.....
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City..... Zone..... State.....
IMPORTANT: Company's Type of Business.....

Short Courses--

(Concluded from Page 1)

of one problem in which to specialize.

Plan A provides for figuring heat loss and designing a simple duct system for heating a small one-story house with basement.

Plan B provides for calculating both heating and cooling load and designing a duct system for a split level home.

Plan C does the same for a rambler home with crawl space.

Plan D provides for calculating heating and cooling loads and designing a year-round air conditioning system for an old farmhouse with two stories and a basement.

For specific information on registration fees and room accommodations, write to the college you desire to attend.

The schedule follows:

Date	School
Jan. 22-25	Penn State University University Park, Pa.
Feb. 3-6	Washington University St. Louis, Mo.
Feb. 3-6	Oklahoma State College Stillwater, Okla.
Feb. 3-6	N. Carolina State College Raleigh, N. C.
Mar. 17-20	University of Connecticut Storrs, Conn.
Mar. 31-Apr. 3	Michigan State University E. Lansing, Mich.
Mar. 31-Apr. 3	Purdue University Lafayette, Ind.
Apr. 2-5	Syracuse University Syracuse, N. Y.
Apr. 8-11	University of Omaha Omaha, Neb.
Apr. 14-17	State University of N. Y. A & T Institute Farmingdale, L. I., N. Y.
Apr. 21-24	Northeastern University Boston, Mass.

Refrigeration Short Course Planned by North Carolina

RALEIGH, N. C. — Five-day refrigeration short course will be held here Feb. 17 through 21 sponsored by the North Carolina State Board of Refrigeration Examiners and the state Refrigeration Trade Association, announces James A. Dean, executive secretary of the board.

Conducted by the Mechanical Engineering Dept., North Carolina State college through the college extension division, the course is designed to provide a review of fundamentals of refrigeration theory and application practice for commercial contractors, servicemen, and technicians.

Set Ventilation Confab Feb. 17-20 at E. Lansing

EAST LANSING, Mich. — Seventh annual Industrial Ventilation Conference will be staged at the Kellogg Center at Michigan State university here, Feb. 17 to 20.

Designed to promote good ventilation practices and design techniques, the conference is sponsored jointly by the Michigan State's College of Engineering and the Div. of Occupational Health, Michigan Dept. of Health.

Conference fee is $35, including course supplies, banquet, and final luncheon.

Speakers during the three-day course will cover design methods, ventilation in the pharmaceutical industry, fan fundamentals, collection of industrial dust and fumes, air distribution in industry, and practical experience with make-up air units.

'Operation Beachhead' To Aid Dealers, *Buys Timken--* Distributors Get Central System Sales

NEW YORK CITY—To stimulate the widest possible use of central air conditioning as the best means of cultivating substantial future sales, American-Standard Air Conditioning Div. has launched "Operation Beachhead."

To assist dealers and distributors establish a beachhead of immediate new customers, American-Standard has "greatly reduced" price levels on its central water-cooled line.

In addition, the company is offering dealers even lower prices to install the equipment in their own homes and offices, according to W. H. Baker, vice president in charge of sales.

The promotion is based upon a thorough evaluation of industry sales records and the du Pont survey of central residential air conditioning which found that "nothing sells air conditioning like air conditioning."

"We know," Baker declared, "that every new owner will be the beachhead for many more sales within the next few years. The dealer who makes the first sale will be the first in line to make others."

Carrying the idea a step further, Baker believes that the air conditioned dealer sells air conditioning.

"When his home and office are so equipped, he knows first hand about installation and the benefits of air conditioned living," he said. "He has the ideal demonstrator for his prospects, which lends conviction to his selling efforts because he is practicing what he preaches."

(Concluded from Page 1)

president, said the division's dealer organization "will give our company additional and more concentrated distribution in many areas. It is our plan to continue this line of products and dealer organization as a separate division of Iron Fireman."

Iron Fireman manufactures residential heating and cooling equipment, commercial and industrial—heating and power equipment, and the "SelecTemp" heating system at its Cleveland plants and in Toronto, Can.

The company also has two plants in Portland, Ore., one of which manufactures aircraft parts and assemblies for both military and civilian use; the other specializes in the manufacture of automatic heating controls, and precision instruments.

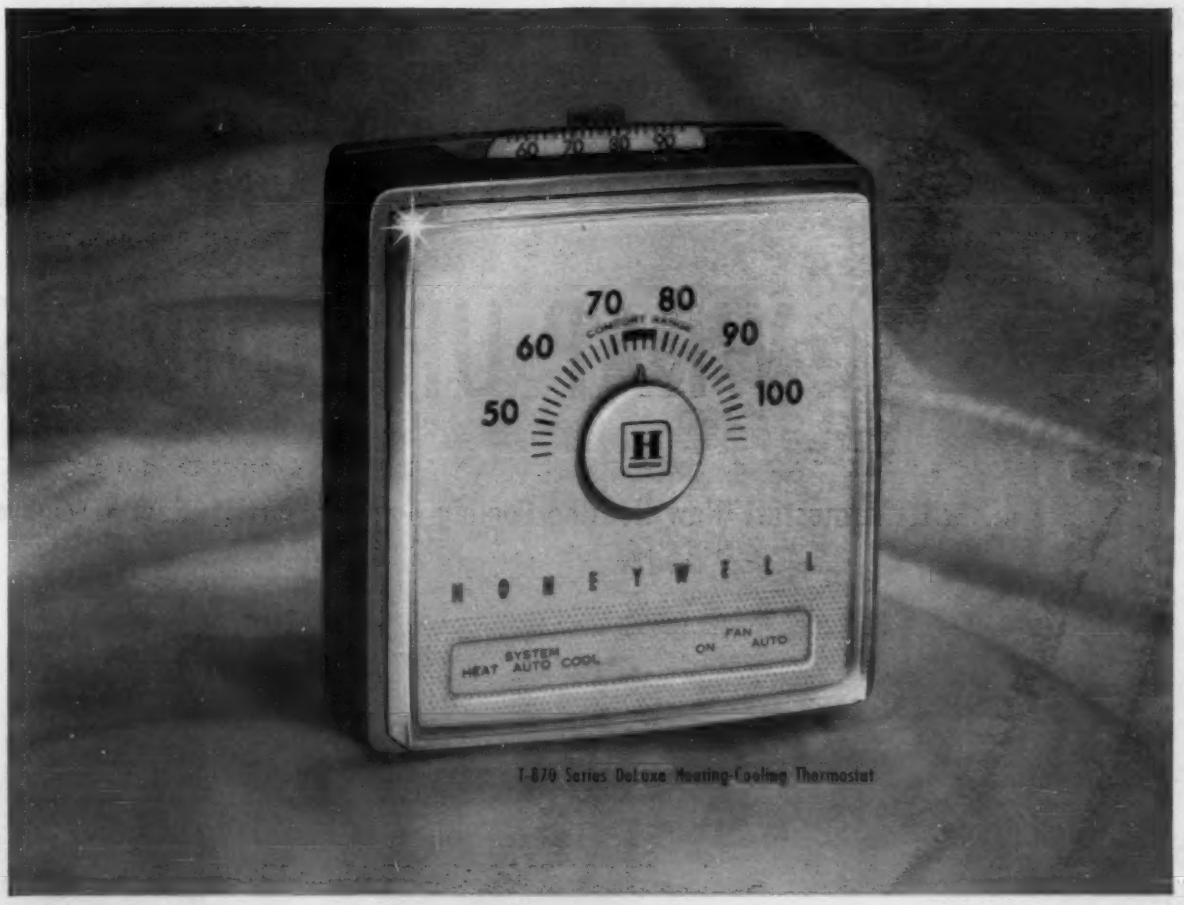
Bohn Appoints Disser Refrigeration Sales Mgr.

DETROIT — Appointment of Paul Disser as Refrigeration Div. sales manager for Bohn Aluminum & Brass Corp. has been announced by R. C. Aylward, general sales manager.

Paul Disser

Disser has had broad industry experience in handling the Bohn line of refrigeration products which includes aluminum evaporators, freezer plates, connectors, aluminum tubing, aluminum extruded trim, heat transfer coils, and condensers.

Disser first joined Bohn in 1949 as a salesman. In 1954 he was advanced to district sales manager at the Indianapolis office.



T-870 Series Deluxe Heating-Cooling Thermostat

NEW FROM HONEYWELL!

top of the Honeywell air conditioning line

ONLY HONEYWELL'S NEW T-870 GIVES YOU six models, seven subbases—up to 42 combinations for every type of single- and two-stage heating and cooling • Semi-automatic or full-automatic changeover • Switching for remote reset available • Anticipation on all stages of heating and cooling • Dependability backed by Honeywell quality standards and nationwide, all-climate field performance tests • Easy installation • Dust-free mercury switch • Handsome design, silver-bronze finish.

More big RAC news from HONEYWELL →

How Much Filter Should Air Conditioned Home Have? Four

Gonzalez Explains FHA Filter Rating

When the Federal Housing Administration issued its Bulletin ME-13 on residential air conditioning equipment last summer, it included as a requirement that "filters shall be sized to provide not less than 1 sq. ft. of total face area per 300 c.f.m. of air."

Some air conditioning engineers believe the requirement too restrictive, and unrealistic. The NEWS asked four to tell why. Their answers to the questions put to them are presented here.

In a later issue a filter engineer gives the other side of the story.

Since this series was prepared, FHA has announced that it is withdrawing the requirement temporarily until the industry comes up with a better one.

Airtemp Div.,
Chrysler Corp.
Dayton, Ohio

"The opportunity to discuss the subject of the filter requirement in ME-13 of the Federal Housing Administration is appreciated. This subject was actually discussed at length with reference to ME-12 and was finally incorporated in ME-13. My knowledge and memory of this matter is that at the time of the discussions, the thinking of the industry, with reference to the FHA housing, was focused on warm air furnaces and cooling coil combinations.

"In discussing filters in connection with furnaces, it was natural to note that the AGA requirements briefly stated that these requirements are for a 300 f.p.m. face velocity *at 85° temperature rise*. This same set of rules also permits the rating of the same furnace, with the same filter, at 70 to 100° rise.

"This means that the AGA ruling calls for a filter velocity not to exceed 300 ft. face velocity at the mid-point of the rating and, with a tolerance being definitely specified, makes this rating area to cover a range of from 255 to 364 f.p.m. face velocity.

"Most manufacturers make oil furnaces that are companion to their gas furnaces and this filter sizing carries over to the oil furnace as well. Hence, when the industry was thinking primarily in terms of furnaces, it was agreed that if any filter limitation was to be written into an FHA bulletin it should not be any more restrictive than the current limitations as reflected in the AGA rules.

"In the meantime, the interest of the industry has broadened to include several types of air conditioning that are not specifically tied to furnaces. This brings us up to the fact that the air conditioning industry generally rates at the top edge rather than at a mid-point as represented by the filter practice described above in connection with furnaces.

"Whereas the usual range of most air conditioning unit ratings is in the area of 300 to 400 c.f.m. per ton, most air conditioning ratings are stated in terms of the 400 c.f.m. per ton point—which is at, or near the top point of the rating band.

"Hence, you will find most of the air conditioning units with filters sized for approximately 365 f.p.m. velocity. This ends up with approximately the same practice of filter sizing in air conditioning units as used in furnaces, but the method of stating the rating is different.

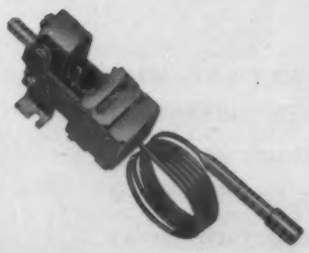
"The furnace filters are rated at approximately the mid-point of the normal range, while the air conditioning units are usually rated at or near the top of the normal application range of air quantity.

"The FHA people have not taken exception to the AGA method of setting a minimum on filter sizing for furnaces and I am confident that the same ruling with reference to the acceptable range can be made to apply to air conditioning equipment that does not include a furnace. If this is done, much

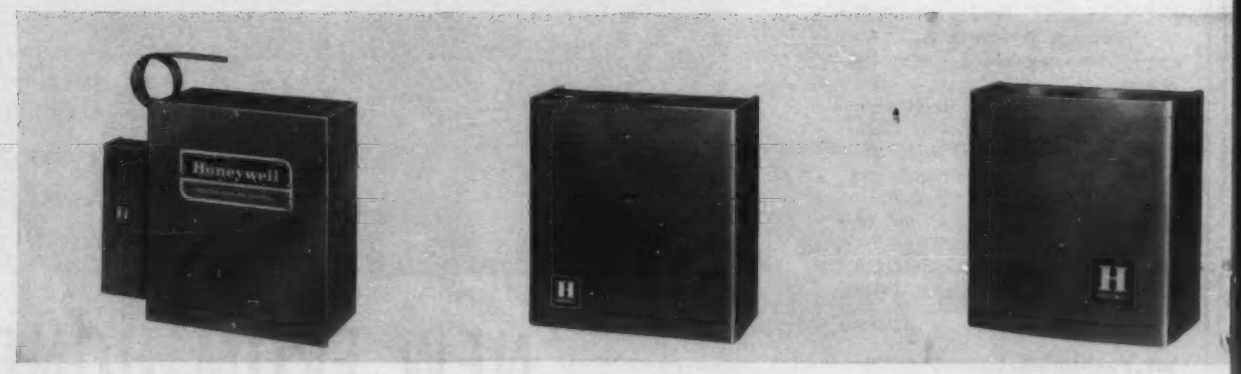
NOW YOU CAN SAY "ALL-HO
WRAP UP YOUR RAC CONTRO

New T-870 Thermostat! New Heating-Cooling Control Panels! New Refrigeration Pressure Controls!

T-870 Thermostat is the all-new, multi-stage T-870 series with semi-automatic or full-automatic changeover and available with remote reset; six models, seven subbases give up to 42 combinations to meet any need.



P430 Series Pressure Controls are compact and functional, available as part of panels or as separate units, as separate high, separate-low, or as combination high low cut out.



WB212, with pressure control for self-contained units.

W429 panel for self-contained add-on, one-stage cooling units.

W430, panel for two-stage self-contained cooling units. Time delay available.

W431 panel with motor starter and pressure control for remote condensing section.

W440 heavy dual pressure control.

W435 panel for remote two-ton condensing units.

For more information about products advertised on this page use Information Center, page 20.

Engineers Give Views

The Questions:

1. Do you think the 1 sq. ft. per 300 c.f.m. rule a fair and reasonable one? Why?

2. Does the brand residential air conditioner you represent offer this much or more filter area? If not, why not?

3. Do you think it necessary for residential air conditioners to have this much filter area? Why?

4. What would you suggest as a reasonable amount of filter area in residential air conditioning?

of the hardship will be removed.

"Also, the past experience with FHA indicates that they have every willingness to review their rules and revise them as required. Should it develop that there is considerable experience and practice to justify higher limits, I am sure that the rules will be changed. I believe that ARI is making a survey on this point."

R. A. GONZALEZ,
Director of Technical Services

Standard Should Be 400 C.F.M.—Newton

The Coleman Co.
Wichita, Kan.

"I am indeed glad to comment on the new FHA requirements for filter area for cooling in residential air conditioning. We were just as surprised as the rest of the industry when this requirement appeared in ME-13 and I suppose like many others in the industry we feel that it is unnecessarily restrictive and that the imposition of such a requirement could easily lead to less satisfactory jobs since installers usually find ways around requirements which impose unusual hardships on them.

"Taking your questions one by one I do not feel that the 1 sq. ft. per 300 c.f.m. is a fair and reasonable one.

"Originally filter areas were selected after careful analysis by many people within the heating industry, taking into consideration the large number of annual hours of operation required from heating equipment and considering also the customer inconvenience imposed by rapid accumulation of dirt and build up of resistance of filters and the rather remote possibility that some hazard might exist from prolonged operation on limit devices controlling burners. Even today when total annual hours of operation of a blower is much higher than when these current rules were formed 1 sq. ft. per 300 c.f.m. works very well for heating without imposing any hardships on the user or introducing any hazards. With continuous air circulation 3,500 to 4,000 hours a year of fan operation is not uncommon for heating.

"By contrast cooling does not have even the small hazard element from dirty filters which may exist in heating and in addition cooling blower operation would seldom exceed 2,000 hours a year even in those areas of the country having the highest annual hours of operation of residential air conditioning equipment.

"As to our own air conditioners we do not ordinarily supply a square foot of filter area for 300 c.f.m. of air flow. As with most other central residential air conditioning units our cooling equipment is designed to function properly with furnaces for heating.

"In most cases the filters are part of the furnace. Therefore, the filter is sized for heating on the basis of 1 sq. ft. or more for 300 c.f.m. of anticipated air flow for heating. Air flows, however, are ordinarily increased to some extent for cooling and therefore more than 300 c.f.m. flows through each square foot of a filter which was selected for heating purposes.

"Our operating history with systems installed in this manner has been excellent and again lack of filter area has not imposed any undue hardships on the user nor created any hazardous conditions.

"We believe a reasonable amount of filter area for residential air conditioning could be set at 1 sq. ft. per 400 c.f.m. of air. We have used this rule ourselves for quite a long period of time and found it to be entirely satisfactory and I am quite sure that others in the industry have done likewise.

"If 400 c.f.m. is chosen for cooling, the air quantity during the cooling season could be increased by 33% over that used for heating, thus supplying adequate cooling to match a given heating capacity in almost every instance.

ALWIN B. NEWTON,
Vice President,
Design and Research

Diehl Asks Standard Be 300-400 C.F.M.

York Div.,
Borg-Warner Corp.
York, Pa.

"It is my personal opinion that the FHA requirement is somewhat restrictive since filter size is dependent upon application limitations that vary broadly from the standpoint of location and the ratio of recirculation to outside air.

"The filter sizes specified with our present residential air conditioners do not meet this minimum limitation, however, they do follow very closely within the range of 300 to 400 c.f.m. per sq. ft. of filter area. Filter sizes used are based on satisfactory field experience and good commercial practice.

"I do not think it necessary for residential air conditioners to have 1 sq. ft. of filter area

(Concluded on next page)

NEYWELL" AND L SYSTEM WORRIES!

Standardize on the most complete line in the industry, made, matched and backed by Honeywell

YOU CAN make control problems disappear for good with Honeywell's big new line of Residential Air Conditioning control systems for every type of single- and two-stage application.

You simplify ordering, stocking and inventory, too; and you get the benefits of undivided, single-source responsibility with the best name in the business behind it.

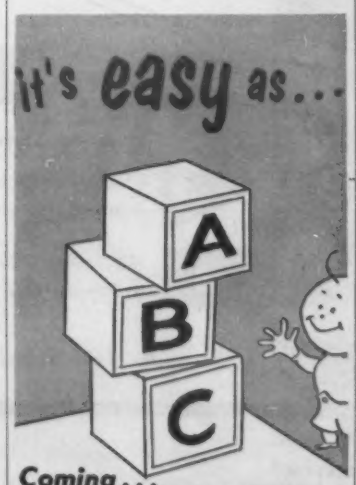
There's a new panel for every need: self-contained, air-cooled package units; units with remote air-cooled condensers; units with water-cooled condensers. Products of Honeywell's modern, unique panel manufacturing plant, they feature the new Honeywell refrigeration pressure control mounted and wired in suitable sub-panel arrangements, as well as the full line of Honeywell contactors.

To complete the Honeywell Air Conditioning Thermostat line there is the all-new T-870 Series Thermostat—a real beauty!

Everything in the line represents four years of painstaking design and actual field test. If you haven't seen them yet, you're missing your best bet in Residential Air Conditioning controls. Call your local Honeywell office, or write Honeywell, Dept. AN-1-16, Minneapolis 8, Minnesota.

MINNEAPOLIS **Honeywell**

First in Controls

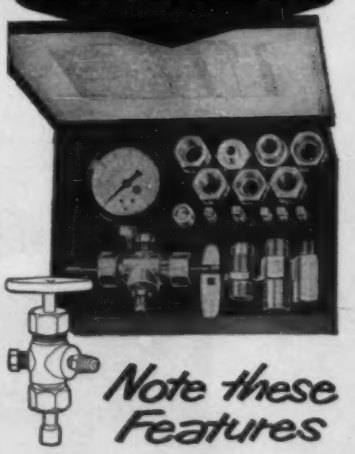


Coming... from LENNOX!

See the dramatic ANNOUNCEMENT IN THE FEBRUARY 3 ISSUE OF THIS MAGAZINE

NOW... SERVICE ALL TYPES OF HERMETIC UNITS with One Valve!

THE NEW KEROTEST HERMETIC SERVICE KIT



Note these Features

★ Eliminates the need for a separate valve for each hermetic unit serviced. Master valve is furnished with adaptors and stem extensions to service specific units.

★ Stainless steel stem provides long service life—*at no added cost.*

★ Available with or without compound gauge in large heavy gauge steel box.

★ Many other time and cost saving features.

See your Kerotest wholesaler today.

Ask for No. 4321 or 4321G (with gauge).

KEROTEST

KEROTEST MANUFACTURING CO.
2502 Liberty Avenue
Pittsburgh 22, Pa.

How Much Filter?--

(Concluded from preceding page)

per every 300 c.f.m. Filter area, in my opinion, is dependent entirely upon the ratio of outside air to recirculated air used and the location of the unit.

"I feel the 300 c.f.m. per sq. ft. requirement is the maximum limitation and therefore should not be applied generally.

"We would suggest that the limitation on filter area in a Standard such as FHA Bulletin ME-13 be revised to permit 300-400 c.f.m. per sq. ft."

A. E. DIEHL,
Chief Engineer,
Commercial

Reprints Available
Hermetic Compressor Design, Development, by Henri Soumerai. Only 40¢ each.
Mail this ad with name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

Yund Questions Method of Rating

Whirlpool Corp.
St. Joseph, Mich.

"There was a time, some eight or 10 years ago, when I was firmly convinced that 1 sq. in. of filter area (nominal filter size) was required for every 2 c.f.m.

This was probably based on a particular filter manufacturer's recommendation.

"More recently, I have seen filters used with less area with apparently similar results. There is, as you well know, considerable difference between the various filters, filter media, filter thickness, etc., regarding the amount of air-borne particles removed.

"I am not sure that we can write a rule governing face velocity alone, which is what we were doing when we were saying so many square inches for c.f.m. and have this same standard apply to all types of filters.

"I am wondering if we do not need a rating method which Design Engineers can use more satisfactorily. I wonder if filters aren't selected by many designers based primarily on the amount of space left for filters rather than on the filtering result.

"The line of air conditioning equipment which we sell does offer the filter area required by FHA with the exception of one model.

"This is perhaps a lot of conversation to say I don't know how a minimum filter area can be established when we are not sure what our filter performance is or what our end result should be.

JAMES O. YUND,
Product Manager,
Central Air Conditioning

Why Would Compressor Ask for Kramer 'Thermobank'? Copy Writing Contest Set

TRENTON, N. J.—The Kramer Trenton Co. announced that it is sponsoring a copy writing contest and that special brochures are being mailed by 105 authorized Kramer wholesalers to their customers.

The brochure explains the rules of the contest and shows a new advertisement featuring the Kramer "Thermobank" automatic re-evaporative hot gas defrost system.

Lead line of the advertisement states "If your compressor could talk . . . it would ask only for Kramer Thermobank."

"Contest participants are asked to give their impressions of why a compressor would ask for Kramer Thermobank," the announcement said.

"The advantages to a compressor offered by Kramer Thermobank, such as no liquid refrigerant slugging, constant crankcase pressure, no oil foaming, and no compressor overloading, are discussed in the brochure."

In addition to having his name and winning copy used in the advertisement, the contest winner will receive a color television set. Second price is a 17-in. portable television set. The five next best entries will win transistor radios. There are 100 honorable mention awards.

The contest will be judged by Pfaus-Finkle Advertising Agency.

Valve Assembling

4 Win Superheat Potentiometers

ST. LOUIS—A contest involving disassembling and re-assembling a "Thermo Valve" against time was staged by Alco Valve Co. at the recent Air Conditioning and Refrigeration Industry Exposition in Chicago.

Winners of the competition were Owen Wright, vice president-engineering, Engineering and Refrigeration, Inc., Jersey, City, N. J.; Ray Schrader, chief application engineer, Larkin Coils, Inc., Atlanta; Ken Carter, head of K. G. Carter Refrigeration Service Co., Winston-Salem, N. C.; and Daniel J. Stearns, a serviceman for Resco Refrigeration Co., Chicago.

Winners were awarded superheat potentiometers. Their average time was 44 seconds. Average time of the 607 contestants was one minue 37 seconds to complete the job.

Tribune Forum Set For May 13-14

CHICAGO—Marketing problems confronting various fields will be discussed at the *Chicago Tribune's* ninth annual Forum on distribution and advertising, to be held here May 13-14.

It's a fact, man!
PEERLESS
can help you make money selling air conditioning during the winter.

Peerless has the proven products for complete summer home comfort and a sales promotion program to help cash in on this great market during the "off season."

1 "No water" *Clima-Twin-Aire* remote condenser and evaporator packages—2, 3 and 5 H.P.

1 PLUS A great new "in-betweener"—the 2-stage, 4 H.P. *Clima-Twin-Aire* package for long-cycle, comfort producing operation.

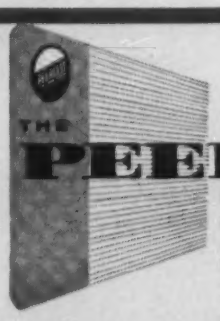
"CLIMA-TWIN-AIRE" CAN BE ADDED TO PRACTICALLY ANY WARM AIR HEATING SYSTEM.

2 *Clima-Pump*, a complete, compact answer to both air conditioning and heating. No water . . . no flame . . . *only* air and electricity.

3 A practical, proven sales promotion program that helps you round up prospects and make sales.

Write for full details on the way you can make money with Peerless

THE PEERLESS CORPORATION
1853 Ludlow Avenue • Indianapolis 7, Indiana
Gentlemen:
Please send me full information on the Peerless complete line of heating and air conditioning equipment.
Name_____
Firm Name_____
Street_____
City_____ State_____



THE PEERLESS CORPORATION
FURNACES
AIR CONDITIONERS
FURNACE FITTINGS
1853 LUDLOW AVE., INDIANAPOLIS 7, IND.

TOP SECRET REVEALED!

The closely guarded secret of how hundreds of refrigerator and air conditioning service and repair men find the extra time to take on more jobs — take home a bigger pay envelope, has been revealed. It's Frankell's Hermetic Compressor Opener — a fully proven, precision engineered unit that requires only 2 minutes of a man's time to open any shape compressor (up to 20" in dia.) — regardless of the position of the weld. It's easy as A,B,C, — anyone can do it . . . no special fixtures or jigs required . . . and just one hermetic job a week pays for this time saving, money making wonder. Remember, when you repair a hermetic compressor — the profits are big.

FRANKELL MFG. CO., INC.,
1074 Home Street, New York 59, N. Y.
WRITE DEPT. A, for complete information.

For more information about products advertised on this page use Information Center, page 20.

Air Distribution Requirements In Year-Round Air Conditioning

10. Fundamentals of Conditioned Air (Cont.)

By Frank D. Klein, Chief Engineer, Governair Corp.

If one subscribes to the statement that "Air Conditioning" is: "—the process by which simultaneously the temperature, moisture content, and movement and quality of the air in enclosed spaces, intended for human occupancy, may be maintained within required limits," we must subscribe to all of the processes that produce the Physiological Index of Comfort.

In comfort heating and cooling, in variance with industrial and commercial heating and cooling, the Physiological Index of Comfort is found in narrow limits of temperatures, humidities, and air velocities.

The Physiological Index of Comfort for the human body, while varying with the individual concerned, nevertheless settles into a niche or norm satisfactory to the majority of people. We spoke of metabolism in previous paragraphs, and explained it as the process of oxidation liberating heat. This heat for most people finds itself at a body temperature of 98.6° F.

However, the skin temperature of human beings is another thing; it can be said that no two people are alike under the same atmospheric conditions. The skin temperature is influenced by the ambient or atmospheric conditions surrounding it, and is subject to change by temperature (both dry and wet bulb), humidity, and air movement.

The skin is a heat transfer medium for the metabolic processes within the body. Therefore it reacts in the same way as any heat transfer medium. It dissipates sensible heat to the surrounding atmosphere. The rate of this dissipation is highly dependent on the Physiological Index of Comfort or the Effective Temperature.

Though there are many opinions both published and held as to the Physiological Index of Comfort, opinions and recommendations usually follow those derived from many research studies initiated by A.S.H.A.E. Reproductions of these characteristic studies are shown in Figs. 4 and 5, courtesy of A.S.H.A.E.

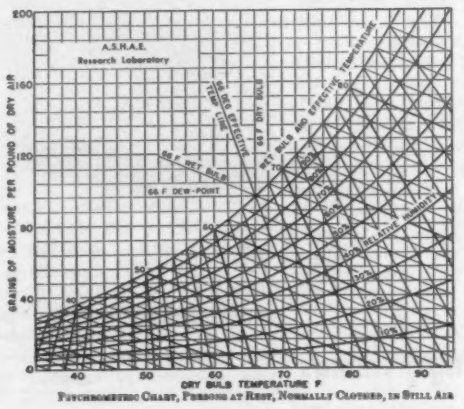
In Fig. 4 the Psychrometric Chart (more about this later) has been plotted to indicate the Effective Temperature and accompanying, contributing conditions for people at rest, and normally, fully clothed. Note the Effective Temperature line and its convergence with other than normal conditions, particularly in reference to the Dewpoint. In Fig. 5 the Comfort Chart has been plotted based on summer and winter comfort conditions in relation to the Effective Temperature line.

Most people more or less at rest are comfortable under a majority norm of conditions.

As we have seen from previous discussion "Quality" of air is but a portion of the Physiological Index of Comfort. Air must be in motion. Note from Fig. 5 that the comfort conditions have been plotted against an air movement of 15 to 25 f.p.m. Movement of the air must be both adequate yet imperceptible to the occupants.

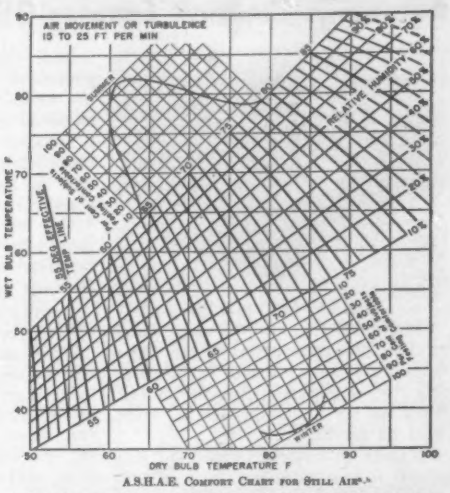
Many of today's residential installations are pitifully balanced out as to air movement. One section of the residence in many cases is oversupplied with air quantity while other sections are starved. As both moisture and heat are liberated in a confined area they must be carried off and returned to the conditioned air stream. Under normal circumstances air movements up to 40 f.p.m. have not been found objectionable.

(To Be Continued)



Psychrometric Chart, Persons at Rest, Normally Clothed, in Still Air

Figure 4



A.S.H.A.E. Comfort Chart for Still Air[a, b]

[a] *Note.*—Both summer and winter comfort lines apply to inhabitants of the United States only. Application of winter comfort line is further limited to rooms heated by central systems of the convection type. The line does not apply to rooms heated by radiant methods. Application of summer comfort line is limited to homes, offices and the like, where the occupants become fully adapted to the artificial air conditions. The line does not apply to theaters, department stores, and the like where the exposure is less than 2 hours. The summer comfort line shown pertains to Pittsburgh and to other cities in the northern portion of the United States and Southern Canada, and at elevations not in excess of 1000 ft above sea level. An increase of one deg ET should be made approximately per 5 deg reduction in north latitude.

[b] Dotted portion of winter comfort line was extrapolated beyond test data.

Figure 5

WOLVERINE

leads the way

with integrally finned tubing

Looking for a way to reduce shell and tube condenser size? . . . or increase BTU extraction? . . . or improve the operation of your air cooled air conditioning units?

Well, thanks to Wolverine Tube and its extensive research and development program, you can solve each of those problems by using Wolverine Trufin®—the integrally finned tube.

Here is tubing where the fins are actually squeezed from the tube wall. As a result, you get nearly 2½ times more outside heat transfer surface than you do with plain tube. Wolverine gives you a choice of low fin type tubing (Trufin Type S/T) for shell and tube condensers or high finned (Types L/C, H/A, H/R) for air cooled installations. Because fins are part of the tube, they can never shake loose due to vibration, thermal shock or pressure variations.

Next time you require finned tubing specify Wolverine Trufin—the original integrally finned tube. For more complete information about Trufin and other Wolverine tubular developments, write for our new book, "Wolverine Serves The Refrigeration Industry." Do it today.

BUY WOLVERINE TUBE—
IT'S MADE IN AMERICA!

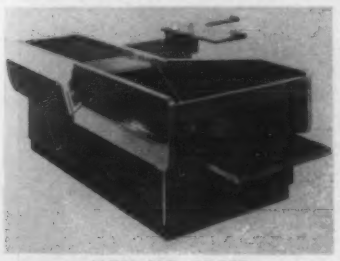
Wolverine Trufin is available in Canada through the Unifin Tube Company, London, Ontario.

CALUMET & HECLA, INC.
CALUMET DIVISION
URANIUM DIVISION
GOODMAN LUMBER DIVISION
WOLVERINE TUBE DIVISION
In Canada:
CALUMET & HECLA OF CANADA LIMITED
WOLVERINE TUBE DIVISION
CANADA VULCANIZER & EQUIPMENT CO. LTD.
UNIFIN TUBE DIVISION

WOLVERINE TUBE
DIVISION OF
CALUMET & HECLA, INC.
17246 Southfield Road
Allen Park, Michigan
Manufacturers of Quality-Controlled Tubing and Extruded Aluminum Shapes

PLANTS IN DETROIT, MICHIGAN, AND DECATUR, ALABAMA. SALES OFFICES IN PRINCIPAL CITIES.
EXPORT DEPARTMENT, 13 EAST 40TH STREET, NEW YORK 16, NEW YORK 6473

Automatic Checkout Counter Offered In 4 Colors



KEY NO. H-130

MARSHALL, Mich.—An automatic checkout counter has been added to Sherer-Gillett Co.'s growing line of supermarket equipment. Unit is 95 in. long, 46 in. wide, and 35 in. high.

Keyed to color-complement any store, it is available in any of four colors, standard grey, coral rose, green, or blue. Each is trimmed in white. The counter is constructed of steel for durability and protected from the carts by chrome bumper rails along the side of the unit. The 18-in. wide conveyor belt is powered by a ⅓-hp. motor and is controlled with an electric foot pedal by the cashier, thus leaving her hands free for speed and comfort.

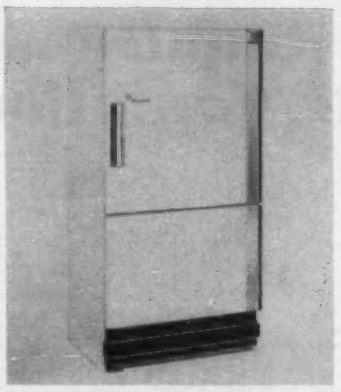
Conveyor may be run at various speeds in order to be effective during slow or peak periods. A three-compartment bag rack is located at the end of the counter along with a moveable pack stand that slides out for convenience to the packer and the cashier, the firm stated.

Introduces Chemical Resistant Coatings, Linings

KEY NO. H-131

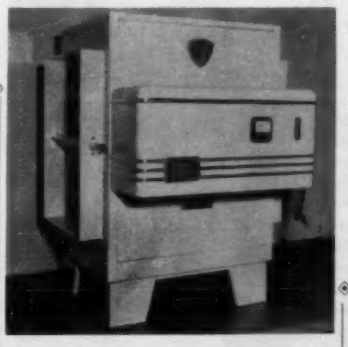
NEW YORK CITY — Corrosion Control Co., Inc. has announced introduction of its new line of chemical resistant coatings and linings for plant maintenance and protection.

Called "Corethylene 100" and "101," both series are based on synthetic hypalon rubber.



KEY NO. H-132

TWO separately insulated and regulated units in one 36-in. wide cabinet is this "Mark XVII" model 11-cu. ft. refrigerator and 6-cu. ft. freezer with 212-lb. capacity made for '58 by Whirlpool Corp. Each "RCA Whirlpool" unit features no-frost operation and adjustable temperature control.



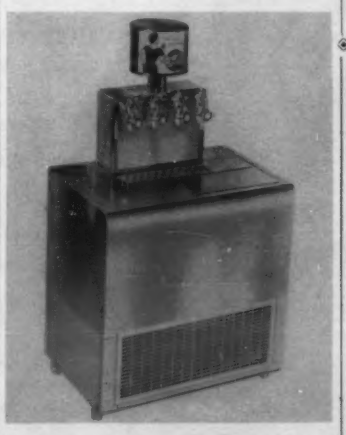
Electronic Air Cleaner Is Economy-Size

KEY NO. H-133

McKEES ROCKS, Pa. — An economy-size model electronic air cleaner has been added to its model 6 line by Trion, Inc.

Known as the 6-100 model, the new unit has a capacity of 800 to 1,000 c.f.m. and is sized to fit a furnace with a B.t.u. rating of 80,000 to 100,000, or a central air-cooling unit of 2-ton capacity, it was stated.

The new model is enclosed in an eggshell and bronze finished cabinet that may be floor mounted or suspended.



Drink Dispenser Has 4 Draft Arms

KEY NO. H-134

CHICAGO — "Coldpoint" drink dispenser made by Bastian-Blessing Co., with self-contained carbonator and compressor, dispenses four cold drinks, plus plain and carbonated water.

It is equipped with four patented "Minimax" draft arms in which the syrup or concentrate and plain or carbonated water are mixed automatically at the nozzle, assuring uniform drinks. Two of the Minimax draft arms have twin levers by means of which plain and carbonated water also can be drawn.

From one filling of the four pressurized syrup tanks, 1,440 6-oz drinks can be served.

Develops Water Treatment To Stabilize Water

KEY NO. H-135

ELGIN, Ill.—A new water treatment has been developed and tested by the engineers at Aquaco Corp. for use in ice cubers, cooling towers, evaporative condensers, and humidifying equipment.

Reduced maintenance cleaning in the ice cubing machines, prevention of pipe system clogging, and observable good results in preventing scale formation in all installations is claimed for "Aquaco-20."

By controlled use of Aquaco-20 continuous stabilizing of water has been achieved—the prevention of scale deposits over wide range of conditions, it was said.

Adds Unit for Commercial Defrosting Uses

KEY NO. H-136

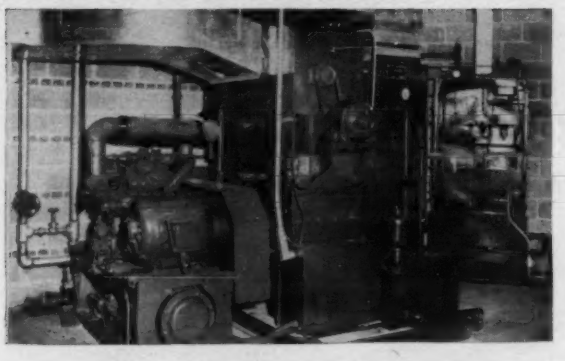
TWO RIVERS, Wis. — New model 8000 series has just been added to the Paragon Electric Co.'s "D-Frost-O-Matic" line and is being offered for all types of commercial defrosting applications requiring defrost periods of less than 55 minute duration.

New series has been designed to meet the requirements of the refrigeration industry for an accurate, easily set defrost control. Accuracy of the defrost setting from 2 to 55 minutes in one minute intervals makes the unit suited for electric heat and hot gas methods of defrosting, the company said.

Typical applications are frozen food cabinets, dairy and vegetable display cases. Defrost cycles can be set to occur as often as every 2 hours up to 12 times a day.

Paragon 8000 Series is available in six models with a variety of switching contact arrangements, and is built with heavy-duty self-starting synchronous motors.

DRY AIR...
PRECISELY as you want it



NIAGARA CONTROLLED HUMIDITY AIR CONDITIONING

This method removes moisture from air by contact with a liquid in a small spray chamber. The liquid spray contact temperature and the absorbent concentration, factors that are easily and positively controlled, determine exactly the amount of moisture remaining in the leaving air. Heating or cooling is done as a separate function.

The Niagara's Controlled Humidity Method using HYGROL moisture-absorbent liquid is

Best and most effective because . . . it removes moisture as a separate function from cooling or heating and so gives a precise result constantly and always. Niagara machines using liquid contact means of drying air have given over 20 years of service.

Most reliable because . . . the absorbent is continuously reconcentrated automatically. No moisture-sensitive instruments are required to control your conditions.

Most flexible because . . . you can obtain any condition at will and hold it as long as you wish in either continuous production, testing or storage.

Easiest to take care of because . . . the apparatus is simple, parts are accessible, controls are trustworthy.

Most compact, taking less space for installation.

Inexpensive to operate because . . . no re-heat is needed to obtain the relative humidity you wish in normal temperature ranges and frequently no refrigeration is used to remove moisture.

The cleanest because . . . no solids, salts or solutions of solids are used and there are no corrosive or reactive substances.

Write for full information; ask for Bulletins 112 and 121. Address Dept. AC-1

NIAGARA BLOWER COMPANY
405 Lexington Ave., New York 17, N. Y.
District Engineers in Principal Cities of U.S. and Canada

the ● in LIQUID EYE®
POSITIVE SEALING INDICATORS
. . . your sign of DEPENDABILITY and QUALITY
USE IT WITH CONFIDENCE

• Pyrex glass, double pressure sealed at sides and ends. • Positive check of refrigerant condition. • Unrestricted full line flow. • Spring-loaded gaskets insure positive seal against leakage. • Guaranteed to 500 psi. • Precision made.

USED BY LEADING MANUFACTURERS ON ORIGINAL EQUIPMENT
Sold by leading wholesalers everywhere
Write today for Catalog E-57 covering the complete Allin line

Illustrated: 200 Series, ⅛" or ¼" female by male flare

Allin
ALLIN MANUFACTURING CO.
410 N. Hermitage Ave. • Chicago 22, Illinois
Over 1,000,000 Liquid Eyes Sold to Date!

Information Center

For *more information* on What's New products, current literature and catalogs available, equipment advertised in AIR CONDITIONING & REFRIGERATION NEWS use Key Numbers where designated or specify products advertised and we'll see that you receive this information promptly.

Products Advertised
(list name, page, and issue date)

. . . . . .
. . . . . .
. . . . . .
. . . . . .

What's New or Current Literature Available

Key No. . . . . Key No. . . . . .
Key No. . . . . Key No. . . . . .
Key No. . . . . Key No. . . . . .
Key No. . . . . Key No. . . . . .

Name . . . . . Title . . . . . .
(Please Print)

Company . . . . . .

Street . . . . . .

City . . . . . Zone . . . . State . . . . . .

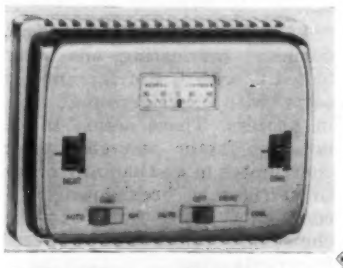
Type of Business . . . . . .

MAIL THIS FORM TO
AIR CONDITIONING & REFRIGERATION NEWS
Readers Service Dept.
450 W. FORT ST. DETROIT 26, MICHIGAN

For more information about products advertised on this page use Information Center, page 20.

——KEY NO. H-137——

FRYERS are now available with four 9-in. high sanitary legs from Frying Equipment & Supply Co.



4-Position Selector Switch Produced

——KEY NO. H-138——

GLENDALE, Calif — A new, four-position selector switch that provides the operator with a choice either manual or automatic system changeover has been added to General Controls Co. line of T-240 series air conditioning thermostats.

The new selector switch contains auto, off, heat, and cool positions, which may be positioned by one sliding button. Another switch located alongside adds to this thermostat's operating flexibility by providing independent fan operation for air circulation.

Thermostat Seals Out Moisture

——KEY NO. H-139——

ATTLEBORO, Mass.—Added recently to Spencer Thermostat Div., Metal & Controls Corp.'s "Klixon"

temperature control line was the low cost type 20220 thermostat, designed to seal out moisture and dust in refrigeration and air conditioning applications.

The control is a disc type, single-pole, single-throw thermostat with automatic reset at fixed temperature settings. Various differentials and tolerances are offered from -20° F. to 167° F.

Apparatus Measures Insulation K Factor

——KEY NO. H-1310——

MURRAY HILL, N. Y.—TESCO has introduced a new type of thermal conductivity apparatus for measurement of the K factor of all types of insulating materials within a temperature range of -120 to 500° F.

New "K-Factor" equipment conforms with A.S.T.M. Test Method C-177-45 and, in addition, provides the user with an apparatus that is low in cost, Testing Equipment Sales Co. said.

MINERALLAC

Hangers

Cable and Conduit ... Messenger

Outserves! Outlasts!

In Zinc-plated Steel and Everdur. All sizes. Insulating bushings available. Top quality. Permit quick wiring. *Send for literature.*

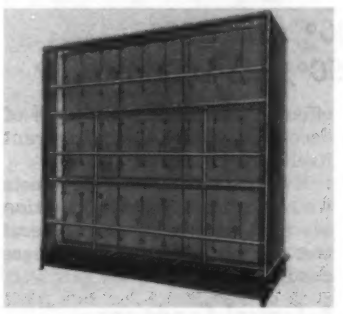
MINERALLAC ELECTRIC COMPANY
25 N. PEORIA ST. • CHICAGO 7, ILL.

Announces Sprayed Coil Dehumidifier Line

——KEY NO. H-1311——

LA CROSSE, Wis.—A complete new line of sprayed coil dehumidifiers for built-up comfort and process cooling systems, has been announced by the Trane Co.

Units are adaptable for applications requiring precision humidity control. Basic components of the remote unit air conditioner are a bank of Trane coils, spray nozzle assembly, heavy-gauge eliminators, and a rugged corrosion-resistant vertical casing.



Two space-saving models in 36 sizes are available—one model with coil sections mounted together and secured by one-piece side panels, and the other with sectionalized side supports for simple removal when coil inspection is desired. Capacities range from 2,500 to 41,000 c.f.m.

Markets 'Mist-Master' Spray-Type Humidifier

——KEY NO. H-1312——

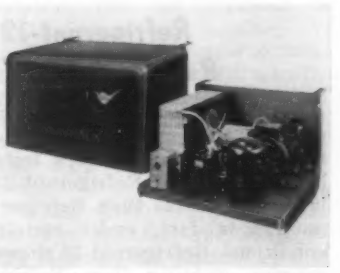
MINNEAPOLIS—New "Cronco Mist-Master" is now being marketed by Cronstroms Mfg. Inc.

The Mist-Master is a spray-type humidifier for use on any type of warm air heating system. It fills the need for adequate humidity in cold, dry areas by adding moisture evaporated into an air stream by-passed between the warm and cold air plenums. A continuous mist is sprayed against a custom woven plastic fiber pad.

Adds Truck Refrigeration Condensing Unit

——KEY NO. H-1313——

LANSING, Mich. — Kold-Hold Div., Tranter Mfg., Inc. has announced the introduction of a new condensing unit for use with "Kold-Hold" truck refrigeration plates.



New unit is a complete-package high side for freezing hold-over plates in a parked truck on standby or over night. Completely covered and ready for mounting on the truck chassis rail, the unit is claimed to eliminate the need for hand-building a special compartment and provides economy and ease of installation.

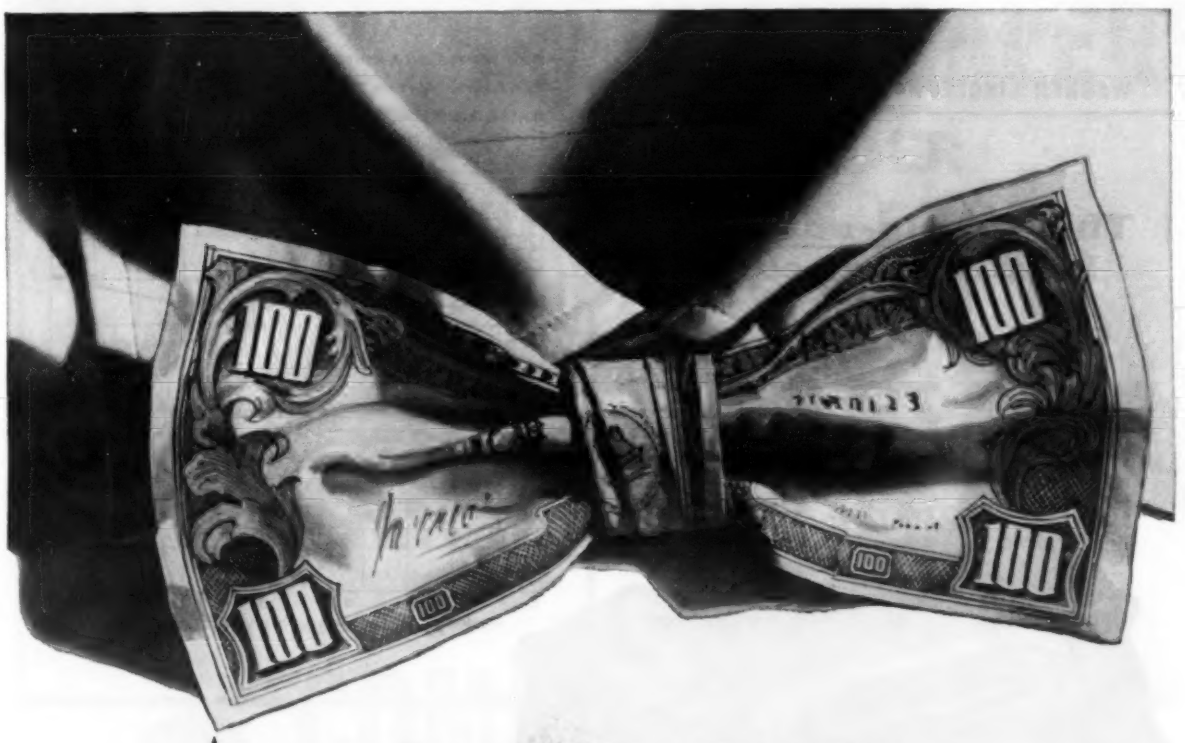
Mounting brackets also make possible the installation of the unit without drilling holes in the chassis members. This unit has a slide out base for easy service.

A range of five unit models permits the selection of the right size condensing unit according to truck size, number and size of plates and other operating factors. The five standard models are ¾, 1, 1½, 2, and 3 hp.

Improves Combination Tube Benders

——KEY NO. H-1314——

CHICAGO — Combination tube benders of a new, improved design which bend both hard and soft tubing and handle from two to seven sizes are now being offered by the Imperial Brass Mfg. Co. Sizes of tubing bent range from ¼ in. o.d. to ⅞ in. o.d., the company said.



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Tests Show Stability of Refrigerant-22

Refrigerant-12 'Much Less Stable' at 300° than 250°; Refrigerant-22 'More Stable' than 12 at 250°, and at 300°

CHICAGO — Contrary to a popular misconception in the field, extensive laboratory tests have shown that Refrigerant-22 is no less stable than Refrigerant-12; in fact, under certain conditions, Refrigerant-22 shows greater stability than Refrigerant-12.

These were among the facts reported by Dr. Donovan E. Kvalnes, manager, Freon Products Div., du Pont, at the first educational session of the 20th annual convention of the Refrigeration Service Engineers Society held here recently.

Dr. Kvalnes described the sealed-tube tests which were conducted with both refrigerants, together with refrigerant-grade oils, and several additives which might be found in operating units. He briefly told how refrigerant breakdown was measured in the laboratory.

Dubs Tests Valid Guides

Stating that such tests only approximate what actually happens in a unit, he pointed out that they nevertheless are valid guides to what to expect in the field.

For example, there have been numerous field complaints that the normal motor insulation materials for Refrigerant-12 are not as suitable for Refrigerant-22. Laboratory tests have shown, not only that cellulose is darkened and embrittled in the presence of Refrigerant-22, but that the cellulose has the effect of increasing the rate of decomposition of the refrigerant itself.

Kvalnes reported on tests which studied the decomposition of refrigerants under several test conditions. Typical of these conditions were:

7 Typical Conditions

1. Refrigerant-oil-metal combinations: copper and mild steel strips were placed in the sealed tubes with the refrigerant-oil mixture and held at test temperatures of 250° and 300° for up to 500 days, or until excessive chemical reactions were noted.

2. Oil viscosity: this variable was found to be without significant effect on refrigerant stability.

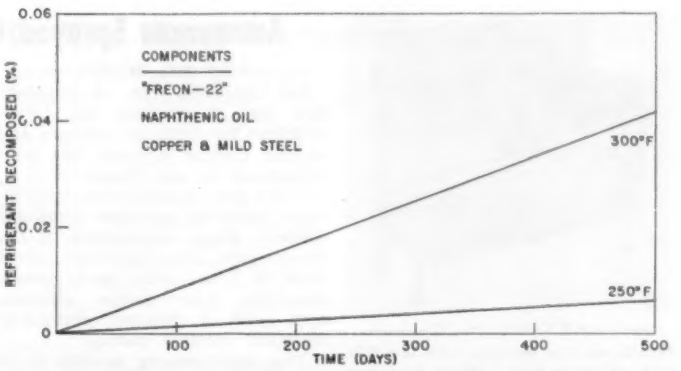

FIG. 1—The upper line shows that after 500 days at 300°, Refrigerant-22 (in a refrigerant, oil, metal system) has decomposed only slightly—less than .04%.

3. Oil additives: anti-rust and anti-foaming additives do not appreciably affect the decomposition of refrigerants. TCP, on the other hand, was found to have a harmful effect in that it increased the rate of refrigerant decompositions at the test temperatures.

4. Lubricating oils: several domestic lubricating oils were tested with Refrigerant-12; tests with Refrigerant-22 are in process. There seems to be no one factor in oils which contributes more than any other to refrigerant breakdown. Silicone oils were found to be chemically compatible with refrigerants also.

5. Metals: the presence of metals definitely increases any chemical reactions going on in a refrigerant-oil system. Copper and steel had a noticeable effect, and the addition of aluminum seemed to increase Refrigerant-12 breakdown, but not to a degree to be of "practical significance."

6. Anti-freeze agents: one per cent, by weight, of methanol (alcohol) was found to be without significant effect on a Refrigerant-12 system, when copper and mild steel were present. However, when aluminum was in the system, the methanol reacted with it to form the gas hydrogen and a chemical known as aluminum methylate.

Even in such a case, however, there is no marked effect on refrigerant decomposition.

7. Moisture: Water, in concentrations up to 80 p.p.m., had no effect on the decomposition of the refrigerant in the sealed tube tests. Nevertheless, Kvalnes stated, "the use of a drier is recommended as a way to avoid the formation of, or result in the removal of, unwanted impurities."

Summarizing his findings, he reported, "Refrigerant-12 is much less stable at 300° than at 250°. Refrigerant-22 is more stable than Refrigerant-12 at

(Concluded on next page)

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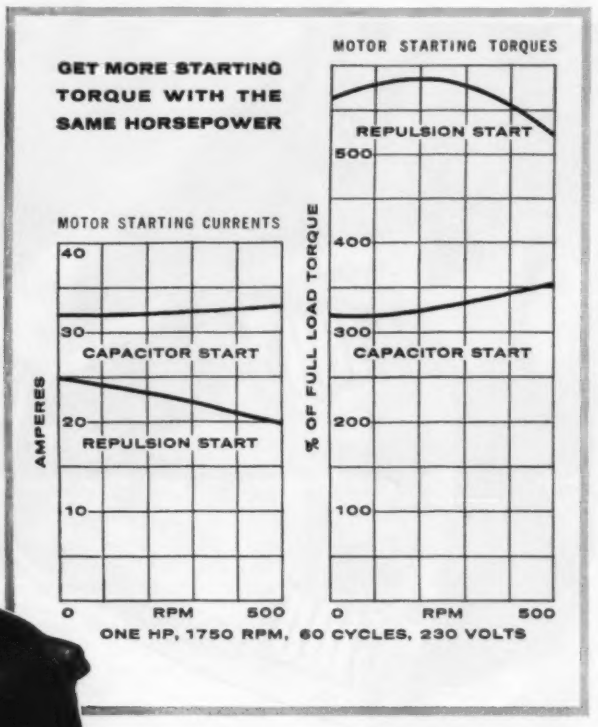

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1½	204	184
2	224	213
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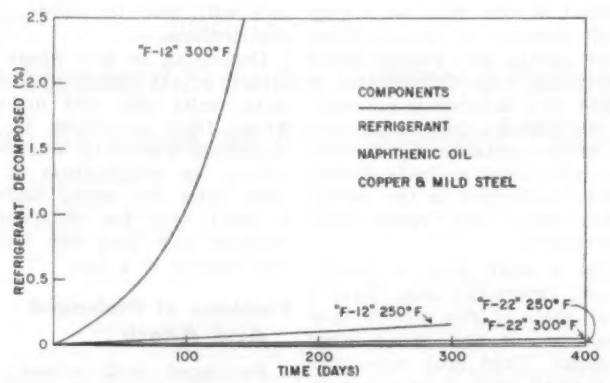

FIG. 2—By comparison with Refrigerant-22 (very low lines on chart), Refrigerant-12 decomposed to a greater degree during the tests. After a little more than 100 days at 300°, Refrigerant-12 had decomposed over 2.5%, and the rate of continuing decomposition was increasing rapidly.

Refrigerant-22 Tests--

(Concluded from preceding page)

250° and very much more stable at 300°.

'Avoid Moisture, Methanol In System'

"Low amounts of moisture and methanol have little effect on refrigerant stability in the presence of a good oil. However, because of the chemical reactivity of water and alcohol, they should be avoided in operating systems.

"Cellulose is considered to be the limiting factor in regard to the stability of a hermetic system containing Refrigerant-22, and a suitable insulation substitute would be very useful."

During the question and answer period, Kvalnes pointed out that many of the early troubles with Refrigerant-22 were due to the fact that compressors designed for Refrigerant-12 were being converted to 22 without true redesigning in the engineering sense.

'Direct Comparison Between 2 Not Valid'

Stressing that the operating conditions in units charged with either refrigerant are not the same, he stated that it is not valid to attempt direct comparison between the two refrigerants. He stated further that troubles with Refrigerant-22 should be behind us as far as the newer compressors are concerned—if design temperatures stop their upward climb.

SLANTS ON SERVICE

"Slants on Service" is a "package" devised by the NEWS to meet the needs of busy servicemen and contractors.

Always Check Voltage At Motor Terminals

Low voltage is still a frequent cause of motor-compressor units not operating properly. In some instances the low voltage condition may be external to the location, and not much can be done about it, but in many cases it's an internal problem.

"When we get a long distance call from a contractor or user on such matters, generally our first question is whether they've checked the voltage," says Glenn Detrick, service manager of Copeland Refrigeration Corp.

"Invariably they say they did and that the voltage is okay. Then we ask, 'where did you check the voltage—at the motor terminals?' Usually they admit they haven't done that.

"Voltage at the service entrance may be okay and likewise at the nearest junction or fuse box, but still be low at the compressor motor terminals due to such things as inadequate wiring," Detrick points out.

So, always check the voltage at the motor terminals.

* * *

Rolling Terminal Nut Shorts Out Compressor

If you should drop one of the terminal nuts in the terminal box when servicing a motor-compressor unit, be sure to fish out the nut even though this might take more time than getting another nut out of your tool kit. There is at least one case on record where failure to retrieve the nut resulted in erratic compressor trouble.

The motor-compressor in question would operate satisfactorily for two or three weeks, and then give trouble momentarily. It would be okay again for awhile, and then the troubles would resume.

It was finally discovered that an extra terminal nut was rolling loose in the bottom of the terminal case. Movement due to vibration would sometimes cause this nut to make a short between the terminal case and one of the terminals, which naturally interfered with operation of the compressor.

For Your Reprint Copy

"Emergency Diagnosis, Repair of Hermetic Unit Electric Components," by John L. Zant, mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort, Detroit 26, Mich.

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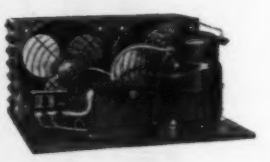
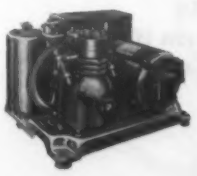
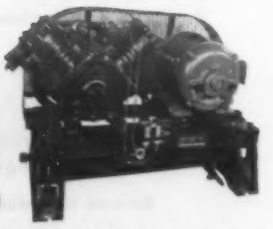


COMPRESSORS
⅛ H.P. through 2 H.P.



OPEN UNITS
¼ H.P. through 5 H.P.



NEW KELVINATOR 5-YEAR WARRANTY PLAN

is now included in the factory cost of all sealed condensing units. It's low in cost, labor-saving and gives you quick replacement service. See your Kelvinator wholesaler for details—today!

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SPECIALISTS IN REFRIGERATION SINCE 1914

BASIC CHEMISTRY

(As Applied In Refrigeration)

Part 7—Refrigerant Breakdown (Con't)

By Frank J. Versagi

When refrigerants break down and generate acids and gases, these latter products are naturally going to have an effect on the unit—on the metals, the windings, the gasketing materials. Just how these things happen is our next logical study. A couple experiments and some simple explanation will get this information across.

Just to get the feel of things, let's assume that one ounce (by weight) of Refrigerant-12 has completely reacted with ⅓ oz. of water (by weight). If this reaction has gone to completion, we will have formed:

⅔ oz. of hydrochloric acid
⅓ oz. of hydrofluoric acid
⅓ oz. of carbon dioxide gas.

This is more water than you will ever encounter in a unit (I hope!), but it will make it easier to follow the explanation.

We saw in our experiment with the polished metal pieces that the acid will attack the metals in contact with it. And this is the first thing that we must consider in our theoretical situation. What actually happens to the metal; where does it go? The most likely reaction in a unit would be a reaction between the hydrochloric acid and any iron in contact with it.

Iron plus Hydrochloric Acid equals Iron Chloride plus Hydrogen or

$$Fe + 2HCl = FeCl_2 + H_2$$

When the reaction takes place, the iron actually disappears as a metal. That portion of the metal which is affected dissolves in the acid just as sugar dissolves in coffee. In effect, what once was a solid metal becomes a chemical in liquid form. If there actually were ⅔ of an ounce of hydrochloric acid in the unit, the considerable amount of iron chloride formed would flow through the refrigeration system.

The large amount of hydrogen gas formed would raise the head pressure until it were purged.

Now, if such a great amount of iron were dissolved off of some place like a heavy housing, there would be no real harm in such an acid attack. If the acid attacked a steel bearing, though, or a piston surface, or any operating surface, the trouble would be immediately noticeable.

In practice, where there never will be such large amounts of acid formed, what actually may happen is that a very small amount of acid dissolves a very small amount of metal. Since there usually isn't enough liquid (excluding the refrigerant in which iron chloride is not soluble) to dissolve the iron chloride or other metal salts formed, they will travel as finely divided solids, suspended in the refrigerant, until they reach some obstruction.

Get a small glass of hydrochloric (muriatic) acid. Drop a small piece of iron wire or steel wool into it and watch what happens. Then drop some acid on a small area of an iron casting or plate, then let it evaporate.

In the first case, the iron will disappear into the liquid; in the second case, solid iron chloride will appear.

If acid has only formed and reacted once, nothing much will occur. If water is constantly entering the unit, however, and acid is consistently being formed and reacting, these solid chemicals will tend to build up at obstructions.

Depending on just where the attack on the metal occurs the metal salts may end up anywhere from an elbow, to the expansion valve, to the drier. Indeed, an examination of the used drier for metal salts is a good test for determining whether any acid has formed and reacted in a unit.

Problems of Prolonged Acid Attack

Prolonged acid attack will cause such difficulties as frozen valves or inoperative springs, but practically speaking, any unit which is allowed to go that long without the acid being noticed needs a new serviceman!

The presence of acid or some active chemical in a unit is necessary before the familiar copper plating can occur. (Some of the chemicals in certain oils have been blamed for copper plating.) Although the entire mechanism of copper plating is not fully understood, the reaction is basically as we described it in our series on corrosion.

Briefly, the copper is dissolved by the acid or active chemical from either the tubing or some brass part, is carried through the unit by the refrigerant flow, then plates out or is displaced on some iron or steel part. Most often, this displacement takes place on the most highly polished iron surface available; that is why bearings are so often the victims of copper plating.

Mineral Acids Attack Nylon, Rubber, Neoprene

The metals in a unit are not all that are attacked by mineral acids like hydrochloric acid. Certain non-metallics can be affected.

Nylon, for example, now used in so many valves, will break down under continuous exposure to hydrochloric acid. Rubbers and neoprene, while more resistant, will also suffer when exposed for a long time to acid. It isn't very often that there is enough acid in a unit for a long enough time to attack these non-metallics, but it has happened.

Consider Windings

In hermetics, there are the windings to consider. This can be a serious problem, for when windings are attacked by acids, they break down. In breaking down, they release large amounts of moisture. This moisture tends to form more acid and the whole circle begins again.

In addition, as the windings break down, the chance of a short and burnout increases, and in this case very large amounts of acid can be generated by some of the reactions we have discussed before.

In such a case we are no longer talking about parts per million; we are talking about enough acid to burn your skin if you touch the unit, or the oil in the compressor. It's a good idea to work inside a burned out unit with rubber gloves on, just for safety's sake.

One serviceman has found that he can safely handle burned out R-12 units without gloves, but that he gets festering sores under his cuticles if he touches a burned out R-22 unit without gloves.

(To Be Continued)

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For more information about products advertised on this page use Information Center, page 20.

'Automatic Self-Contained Ice-Makers'

ARI Standard Provides Published Ratings Shall Be Based on ASRE Standard 29-56

WASHINGTON, D. C.—A new ARI Standard for "Automatic Self-Contained Ice-Makers" has been issued by the Air-Conditioning and Refrigeration Institute, it was announced by Geo. S. Jones, Jr., managing director.

In addition to recommending "minimum standard specifications and recommended methods of rating and testing automatic self-contained ice-makers for the guidance of the industry, including manufacturers, distributors, installers, contractors, and users," the publication also:

". . . specifies minimum sanitation requirements and acceptable cleaning methods for the guidance of federal, state, county, district, and municipal health authorities and other food regulatory agencies."

On the subject of ratings, the standard, numbered ARI 810-57, specifies that "published ratings shall be based on data obtained in accordance with ASRE Standard 29-56, and shall be such that the performance of any production unit will have an ice-making capacity not more than 6% below and a power input not more than 7% above said ratings. The actual amount of water used in making ice shall not be more than 10% above the published amount."

The publication also makes provision for safety, design, and construction features in accordance with codes and standards.

This new ARI standard was prepared by the Engineering Committee of the Self-Contained Ice-Maker Section of ARI, of which H. A. Brysselbout, York Div., Borg-Warner Corp., is chairman. Copies are available from ARI at 35 cents each.

'Over Capacity' Refrigeration

Converts Boning Room To Cooler Overnight To Save Labor Loss

DENVER—When M. J. Landers, Denver packing plant executive, designed his $250,000 beef boning plant in the Denver stockyards area, he installed "over capacity" refrigeration to eliminate expensive losses of labor time in the production of from 200 to 500 beef quarters per day.

Landers has 20 beef boners working face to face in his boning room. Beef is moved by overhead conveyors from the 32° F. cooler into the boning room, which is held at temperatures between 50 and 60° F. Here it is boned and moved on for further processing.

Refrigeration is provided by two Worthington 7 by 7 compressor units supplying 17 Gebhardt overhead cooling coils.

Recognizing labor as one of his major costs, Landers knew that much time was lost near the end of the day, when the boners had to put the meat back in the cooler.

To eliminate this loss, he provided sufficient refrigeration to bring the boning room down to freezing temperature. At the end of the day—on busy days when every minute is needed for the boning operation itself—the workers merely leave the quarters where they lie.

Landers throws a lever to cut in the second compressor and activate the nine ceiling coils in the boning room. These quickly bring the room down to 32° F. and maintain that temperature throughout the rest of the night.

"Our ordinary refrigeration needs can be met by less than half the capacity available," Landers said, "but we expect to benefit tremendously from our ability to convert the boning room into another cooler."

NARGUS Meeting To Feature Equipment Exhibit June 8

CHICAGO — The new Coliseum in New York City will be the site of the 59th annual convention of National Association of Retail Grocers, June 8-12, 1958, the group announced.

The meeting will offer a concentrated business program, and exhibits of the latest food store products and equipment.

Convention registration fee is $25 per person. Advance registration and requests for hotel accommodations should be sent to National Association of Retail Grocers, 360 N. Michigan Ave., Chicago 1, Ill.

Soda Fountain Units

Sponsors Field Service Training School Series

CHICAGO — Bastian-Blessing Co. is sponsoring a series of field service training schools for servicemen and refrigeration engineers interested in servicing soda fountains, fast food refrigerated equipment, or carbonators.

These schools are conducted by Cecil Merryman, manager of the company's Parts & Service Depts., and are free. Schools will be held across the country and all servicemen in each locality are invited to attend. Following is the schedule for January and early February:

Jan. 27—St. Louis, Coronado hotel; Jan. 28—Memphis, Ellis-Bagwell Drug Co.; Jan. 30—New Orleans, The St. Charles hotel; Jan. 31—Montgomery, Ala., The Helburn Co.; Feb. 3—Atlanta, Atlanta-Biltmore hotel; Feb. 5—Jacksonville, Fla., Hotel Roosevelt; Feb. 7—Miami, Fla., Jack Conkle, Inc.

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Us-Kon solves problems of slugging, defrosting, draining and condensation

US-KON BLANKET HEATING COMPRESSOR

OUTDOOR AIR-CONDITIONING AND REFRIGERATION COMPRESSORS

Us-Kon® Blankets prevent the mixing of oil and Freon and therefore the resultant foaming. The Blanket keeps the oil warm to prevent the passage of Freon vapor into the oil, and to permit its rapid escape when the compressor is started. The Us-Kon Blanket is quickly and easily applied to the *outside* of the compressor—no need to break into the hermetic seal and risk causing leaks.

US-KON BLANKET ON BOTTOM OF COMPRESSOR

US-KON BLANKET IN COIL

DEFROSTING OF COILS

An Us-Kon Blanket is the one *right* way for removing ice from the fin coils. That's because it has a uniform heat source—and gives more inches of physical contact with the fins than any other type of heat source. It's quick, all-over heat.

MOISTURE EVAPORATION

Us-Kon Blankets prevent "sweating" in refrigeration equipment and the resultant freezing of the moisture. Us-Kon works effectively on the walls of frozen food cabinets, ice cream cabinets, cold storage rooms, and around the doors and lids of all types of refrigeration equipment.

DRAIN PAN FREEZING

An Us-Kon Heating Blanket in the bottom of the cooler drain pan gives just the right amount of quick warm-up which prevents the water (after the defrosting) from freezing again. No time or effort needed to chop out ice chunks.

Tell us the type of your product or application. Use convenient coupon.

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'57 Knoxville Home Air Conditioning Sales Jump 15%

22 Contractors Install 380 Central Systems To Top '56; ⅓ In New Homes

(Continued from Page 1, Col. 3)

in 1956 but none at all in 1957.

One distributor, who was not active in residential air conditioning in 1956, claims a total of 80 units for 1957, which represents 21% of the Knoxville total. Two distributors made slight gains, while a fourth dropped sharply from 111 in 1956 to 36 in 1957.

A big gain can be noted for Contractor No. 2 whose 45 jobs in 1957 are 'way ahead of the 10 in 1956. It may be incorrect to list this firm as a contractor, because it is franchised as a distributor. Its operations in the Knoxville area, however, have been on a direct-to-consumer basis, mostly to builders.

"We find it simpler to install the units ourselves and have someone wire them up," a spokesman for this firm frankly explained.

Nearly all of this firm's sales (40 out of 45) were installed for speculative builders.

Builder Sales Rise Sharply

Sales to speculative builders registered a sharp gain in 1957 over the previous year, soaring from 39 in 1956 to 114 in 1957. Most of this gain was accounted for by two firms: Contractor No. 2 with 40 such jobs and Distributor A with 50. Two other contractors and another distributor noted a few sales to the builder.

Great majority of the systems installed in new homes at the choice of the builder were self-contained air-cooled units, which were located in the attic.

A slightly greater number of units, 121, were installed in new homes at the choice of the owner or buyer of the house. While this represents nearly a third of the total 1957 installations in Knoxville, the figure is down considerably from the 178 such installations that were noted in the 1956 survey.

Contractors were unable to offer any explanation for this drop, but it may simply have resulted from the big increase in sales to speculative builders.

Contractor	Total Units 1956	1957	New Homes – Owner	Builder	Existing Homes	Year-Round Systems	Cooling Only	Air Cooled – Remote	S.C.	Water Cooled	With Cooling Tower	Sheet Metal Shop
1	41	50	20	10	20	12	38	35	8	7	7	Yes
2	10	45	..	40	5	40	5	..	45	..	..	No
3	20	32	24	..	8	30	2	24	6	2	2	Yes
4	31	24	20	..	4	21	3	21	2	1	1	Yes
5	20	19	9	..	10	6	13	18	..	1	1	Yes
6	12	15	2	5	8	7	8	15	..	..	..	Yes
7	10	10	..	..	10	..	10	4	6	..	..	Yes
8	6	10	3	..	7	3	7	10	..	..	..	Yes
9	..	6	2	..	4	..	6	6	..	..	..	Yes
10	..	6	1	..	5	3	3	5	..	1	1	Yes
11	14	5	5	..	..	5	..	5	..	..	..	No
12	4	4	2	..	2	..	4	4	..	..	..	No
13	2	4	2	..	2	2	2	4	..	..	..	Yes
14	20	3	1	..	2	1	2	3	..	..	..	Yes
15	8	3	..	..	3	..	3	3	..	..	..	Yes
16	3	3	..	..	3	1	2	3	..	..	..	Yes
17	..	3	..	..	3	..	3	3	..	..	..	Yes
18	2	2	1	..	1	1	1	2	..	..	..	Yes
19	2	2	..	..	2	..	2	2	..	..	..	Yes
20	1	2	..	..	2	2	..	2	..	..	..	Yes
21	1	2	..	..	2	1	1	2	..	..	..	Yes
22	4	1	..	..	1	1	..	1	..	..	..	Yes
Distributor												
A	..	80	15	50	15	65	15	15	65	..	..	..
B	111	36	9	9	18	..	36	..	36	..	..	..
C	3	10	5	..	5	5	5	10	..	..	..	..
D	2	3	..	..	3	..	3	3	..	..	..	..
Total	330*	380	121	114	145	206	174	200	168	12	12	..

*Includes installation of two dealers not represented in 1957 sales.

It would seem likely that many buyers of new homes in the past season found air conditioning already installed.

28% Gain In Sales In Existing Homes

A 28% gain in sales of air conditioning to owners of existing homes was chalked up in Knoxville during the past season, this survey reveals. There were 145 such installations during 1957 compared with 113 during 1956, the accompanying table shows.

As for the types of systems installed, the 1957 picture in Knoxville is especially noteworthy in that more year-round systems were installed than "cooling only" jobs. The survey shows 206 year-round systems and 174 cooling only. In the 1956 Knoxville survey there were 130 year-round jobs and 200 cooling only systems.

Included in the 206 year-round installations are 49 heat pumps, compared with 33 heat pumps installed during the previous year. The 49 heat pumps represent about 13% of the total 1957 jobs. Heat pumps in

(Concluded on next page)

OPPORTUNITIES FOR REPRESENTATIVES

TMC

Opportunities for representatives to handle TMC Molecular Sieve Filter-Driers in original equipment and wholesale fields. Valuable territories still open in New York State, except New York City, New England, Rocky Mountain, West and Northwest states. Write

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For information on our complete line of air conditioning and refrigeration controls, write for Bulletin 5519. Furnas Electric Company, 1114 McKee Street, Batavia, Illinois. A32

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SALES REPRESENTATIVES IN ALL PRINCIPAL CITIES

For more information about products advertised on this page use Information Center, page 20.

Knoxville Home Survey --

(Concluded from preceding page)

1956 accounted for 10% of the Knoxville installations.

Most of the other year-round systems installed during the past season employed electric resistance heating elements.

Knoxville, of course, is served by TVA power through the municipal Knoxville Utilities Board, which offers very low electric rates. Promotion of electric heating in the area has led to many installations of panel heating systems including jobs with resistance heating wires imbedded in plaster ceilings. Because panel systems require no ductwork, the growth of the market for central type cooling systems in homes has been handicapped, according to some contractors at least.

This was a frequent complaint of contractors interviewed during the 1956 survey.

'If You Can't Beat 'Em, Join 'Em'

But as one distributor summed it up during the 1957 survey: "Electric heating is still a problem, but since we can't beat 'em we're trying to join 'em by installing blast resistance heating elements in our air conditioners."

Residential air conditioning, he also noted, has done much to improve the heating business hereabouts.

"Many people are having heating systems with ductwork installed so that air conditioning can be added in the future at comparatively little expense," this distributor said.

Air-Cooled Units 'Take Over'

That air-cooled equipment has "taken over" the residential field is readily apparent in the 1957 Knoxville survey. Only 12 water-cooled systems are listed out of the 380 jobs installed in past season—about the same percentage as in 1956 when nine of the 330 jobs were water cooled.

A trend toward greater use of remote air-cooled condensing units for residential air conditioning is seen in the surveys, also. There were 200 remote systems compared with 168 self-contained air-cooled units installed during 1957 in Knoxville. The previous year saw 119 remote jobs and 202 self-contained units.

21 Makes Installed

A check of the manufacturers represented in the 1957 Knoxville installations turns up 21 different makes. Of these 12 may be described as old-line air conditioning and refrigeration firms, including three whose earlier output was largely limited to room units. Nine of the manufacturers in the 1957 survey are furnace manufacturers. Listed among the latter are subsidiaries of air conditioning manufacturers which operate more or less independently.

The 12 old-line air conditioning manufacturers picked up a combined total of 263 units, or 69% of the Knoxville total for 1957. The nine furnace manufacturers are represented by 117 jobs, or 31% of the total.

In the 1956 survey, it was shown that 13 old-line air conditioning and refrigeration manufacturers were represented in 74% of the jobs while 10 furnace manufacturers garnered 26% among them.

Cooling Contractors Outnumbered

As in the previous year, heating, plumbing, and sheet metal contractors appear to dominate the Knoxville residential air conditioning scene. Seventeen of the 22 contractors listed fall in this category with a combined total of 161 installations. Four may be classified as air conditioning and refrigeration contractors, and their total jobs amounted to 45. Remaining contractor is an appliance firm.

The top two distributors listed are primarily in the appliance field; the other two are plumbing and heating supply houses.

Helps Build over 30 Years

Veteran Manager C. T. Lawson Retires as Kelvinator Appliance Div. Sales Chief

DETROIT — A veteran sales manager who helped build the electrical appliance industry into a $10 billion business during a career of more than 30 years, has announced his retirement.

C. T. Lawson

Charles T. Lawson, vice president of American Motors Corp. and director of its Kelvinator appliance division's sales activities for nearly 20 years, relinquished his post effective Jan. 1.

Lawson joined the Frigidaire Div. of General Motors in 1932, after having been in the appliance or radio field ever since he got out of the Marine Corps in World War I. In 1934 he became Frigidaire's household sales manager.

Lawson came to Kelvinator in 1939 as household sales manager, to untangle the pioneer refrigerator company's organizational problems and to cope with new distribution problems in the volatile young industry's changing patterns of merchandising.

Lawson had a major role in developing a three-fold approach that has remained Kelvinator policy for the past 18 years. He rebuilt the distributing organization, retaining the best of the independent distributors and providing them with territories of sufficient size to offer a reasonable profit opportunity. In key major markets where competitive conditions made it difficult for the independent to achieve a fair return on invested capital, he organized some of the first zone offices (factory branches) in the industry.

At the retail level, he inaugurated Kelvinator's "retail-minded" policy, by establishing at the outset the philosophy that what was good for the dealer was also good for the manufacturer. Dealer lists were revised to make sure that each market was covered.

He was named general sales manager for Kelvinator in 1941, and vice president in charge of sales two years later. In 1952 he became vice president in charge of appliance distribution, and in 1954, executive vice president of the newly-merged American Motors Corp. in charge of the appliance division. He has been a staff vice president for the past year.

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COMMERCIAL
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FOR SINGLE OR MULTIPLE SPACE INSTALLATIONS

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When you sell air conditioners the York Lease Plan Way you sell *more*, make *more* because you offer customers *more* for their money! You offer longer term than lending institutions...savings on taxes...rapid depreciation write-off...dozens of other money-saving benefits!

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May be installed singly or in multiple to fit the special needs of any size or type business. No special foundations required, no need to tear the building apart. Installs quickly, easily—without interrupting business routine.

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York YORK BW

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OF

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The "Show Case" issue will bring you unparalleled news coverage in the air conditioning field. Edited for constant reference throughout the year, your March 10 "Show Case" issue will include dramatic, detailed market analyses, new air conditioning applications, tested sales methods, as well as details from manufacturers about the features of and plans for their new lines. This penetrating coverage of the air conditioning market will give you the factual assistance needed to make buying decisions.

Your March 10 "Show Case" issue will include also the most sought-after specifications ever published . . . specifications on *all* makes and models of 1958 packaged air conditioners (from window units to residential add-on units to large commercial packaged equipment). You and your key air conditioning men will want to keep this easy-to-read, easy-to-keep Specifications Section handy for constant reference.

Because they want to influence you—responsive, action-taking dealers, manufacturers, distributors, and contractors—more manufacturers than ever before will exhibit their products and services in the "Show Case" issue. This advertising, prominently and colorfully displayed . . . in the largest air conditioning showcase ever assembled, will keep best-buying people "in-the-know," and thus, round out the *full* air conditioning story.

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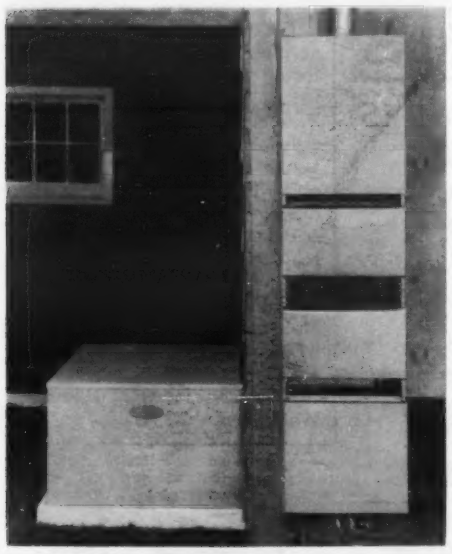

LOW-COST year-round air conditioning has been introduced by Carrier Corp. through the combination of a 3-hp. horizontal cooling unit and a furnace called a "Thermo-Center." For either basement or slab-type home or small business construction, the horizontal unit is placed outside the building and cool air distributed through the warm air heating system's ductwork. Heating unit blower is used to distribute air.

Low-Cost Year-Round Cooling--

(Concluded from Page 1, Col. 4)

matching components offered with all Carrier heating systems will save the homeowner as much as $100 when cooling is added later as ductwork will not require alteration in the shift to a year-round system.

LEAK-PROOF HEAT EXCHANGER

"The new line features an electrically welded one-piece leak-proof heat exchanger, and a newly-designed alloy steel gas burner for quiet, positive ignition. All moving blower parts are isolated from the housing for vibration-free operation. Direct-drive models can be easily converted to belt drive.

"All controls but the thermostat are factory wired.

"The new compactly-built line retains the flexibility of Carrier's previous furnaces for conversion to year-round temperature and humidity control."

AIR-COOLED UNIT

A major feature of the Thermo-Center, the company said, is that the horizontal cooling unit is air cooled, requiring no water or refrigerant piping. It is complete in a single compact, weatherproof metal box and can be installed in an attic or crawl-space where horizontal-type furnaces are used.

Meat Cutters Agree with Chicago Stores To Permit Frozen Specialty Meat Sales

CHICAGO—A recent agreement reached between grocery chains and independent food outlets and local meat cutters unions now permits the stores to sell frozen specialty meat items such as frozen and formed (flaked or chipped) patties and chopettes, "with or without vegetables, breaded or unbreaded."

All frozen fresh meat items, however, including "red meat line" choice cuts such as marketed by Swift & Co. and Armour & Co. still may not be sold at any time in groceries.

Negotiations were under way between meat cutters union and food outlets in this city's suburbs and DuPage and Lake counties in an effort to reach similar agreements. The meat cutters were given pay raises by the stores in return for the union's concessions.

This is one of the few major markets where frozen fresh meat cuts are not sold.

Refrigeration Helps Milkmen

CHARLOTTE, N. C.—Stating that modern refrigeration has "all but eliminated the need for pre-dawn deliveries," this city's major dairies have agreed to make morning milk deliveries after the sun comes up. They say they want their milkmen to lead a little more normal lives.

Williams Sale--

(Concluded from Page 1, Col. 5)

franchised accounts. The company announced franchises will be available in areas not now represented and new products will be added this year to broaden the lines.

W. J. Olsen, vice president of NUE and general manager of Armstrong, disclosed promotions of two men in sales posts in connection with the move.

NAMES SALES CHIEFS

Charles L. Brooks, who has been sales manager of Armstrong, will be director of heating and air conditioning sales for the parent firm. He will be top sales executive for both Armstrong and Williams lines. Edward M. Clifford, previously eastern regional manager for Armstrong, will succeed Brooks as that company's sales manager.

Jack Gleason, sales manager of Williams in Bloomington, assumes a similar post with the firm here.

Olsen also announced that Earl Styx is new regional manager of the western district; P. Y. Matthews regional manager of the southeastern district; and Don Thomson regional manager of the northeastern district.

'NO EFFECT ON EMPLOYMENT'

Olsen said the shift of operations from Bloomington to Columbus will have "no immediate effect on employment" at the Armstrong plant. Williams was a pioneer in production of oil-fired furnaces and now makes a complete line of oil and gas furnaces and conditioners.

"Two divisions," Olsen commented, "will not only help to improve our position in a very competitive industry, but also provide increased opportunity for sales expansion."

Gets Loan To Diversify In Soft Drink Dispensers

MINNEAPOLIS—A $300,000 mortgage loan on its plant here has been obtained by a producer of beverage dispensing equipment and aircraft systems.

Cornelius Co. said the funds will be used primarily as working capital to support already begun diversification of production to include soft drink dispensing machines.

Westinghouse Packaged Conditioners--

(Concluded from Page 1, Col. 2)

units, which consist of an outdoor condensing coil and an evaporative coil, easily installed in existing furnace ductwork, will be available in many different condenser-coil combinations," the announcement said.

"The condenser can be installed in an outdoor location, such as the breezeway, or yard, thus requiring less indoor space than a completely self-contained cooling unit.

COILS, CONDENSERS INTERCHANGEABLE

"The concept of interchangeable coils and condensers makes it possible for homeowners to get precisely the right cooling capacity for their individual needs."

A unit for attic or basement through-the-wall installation will be included in the 1958 Westinghouse air conditioning line.

"It is rated at 34,000 B.t.u. per hour, and is designed to meet the cooling needs of smaller homes," according to the company. "An air-cooled unit, the 'Unitaire' is engineered to cool the average five-room home in extra-hot zones, and up to seven rooms in more temperate climates. It can be connected to existing heating systems."

3-TON HEAT PUMP

The Westinghouse remote heat pump, which has been field tested in 18 cities throughout the United States, is a 3-ton air-to-air unit rated at 36,000 B.t.u. per hour cooling and 72,000 B.t.u. per hour heating. Leading feature is flexibility. Because of its split-system design, with one coil located in an outdoor location, the indoor unit can be installed in the basement, attic, utility room, or crawl space underneath the home.

Rounding out the line is a series of commercial-size air conditioners which range in capacity from 33,500 B.t.u. up to 40 tons.

For small commercial application, three units are available in either air-cooled or water-cooled design. These range from 33,500 to 104,400 B.t.u. and can be installed as free-standing units or connected to ductwork for multi-space application.

AIR-COOLED UNITS UP TO 15 TONS

Larger commercial units begin at 10 tons' capacity and range up to 40 tons. Packaged air conditioners up to 15 tons are available either as air or water-cooled units. Those from 20 to 40 tons are water cooled and designed to meet commercial and industrial controlled climate requirements.

All Westinghouse packaged air conditioners carry a five-year warranty on the refrigeration cycle, feature the Westinghouse hermetic compressor, a permanent filter system, and completely insulated cabinet.

The compressor section in all models has been isolated from the air stream by a 1½-in.-thick layer of aluminum-backed "Fiberglas" insulation.

FTC Decision--

(Concluded from Page 1, Col. 3)

three months and a final decision in as short a time as six months.

National Commercial Refrigerator Sales Association and Refrigeration & Air Conditioning Contractors Association assisted FTC attorneys L. C. Paulson, Ashby H. Canter, and Estelle Ague gather evidence to support the charges of unfair trade practices as they affected refrigeration equipment.

Edwards CO-AXIAL FREON CONDENSERS

A NEW REFRIGERANT CONDENSER

Typical Configuration Available

with these advantages:

- COST REDUCED 30% TO 40%
- CONDENSER WATER REDUCED 35%
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- Stabilizes Capillary Performance
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- Shipping Weight Reduced
- Many Shapes and Sizes Available (1 to 7½ tons)

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Ice cream stays brick hard in Warren's new Self-contained

Strictly brick hard ice cream day and night—day in, day out—thanks to drastic subfreezing temperatures and a sure, unique defrosting system. Proved performance in tropical and high-humidity climates. A wide-open display and a more-than-generous capacity, too.

A one-shelf merchandising canopy, of the same top-quality materials and workmanship as the cabinet itself, is optional. The adjustable shelf adds impact to impulse items or even staples, and invaluable economy from this maximum use of floor space. The cabinet is genuine porcelain and the canopy, baked enamel—both finishes acid resistant and rugged. The good looks is Warren Diamond Jubilee styling. Warren COLORAMICS® bands optional at no extra cost.

There's no simpler, surer way to block-busting packages of ice cream, *merchandised right*, than in the new Warren Self-contained.

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Servicing Automobile Air Conditioners

(Vol. 2)

BY C. DALE MERICLE

The Buick auto air conditioner is the thirteenth make to be discussed in this series. Makes previously described were A.R.A., Artic-Kar, Frigette, Frigikar, Kauffman, Mark IV, Airtemp, Mobilette, Novi, Vornado, Polar-Temp, and American Motors.

Models discussed in the current series are 1956 and/or 1957. For data on earlier models readers are referred to the original series of articles, which is available now in the handy manual, *Servicing Automobile Air Conditioners.*

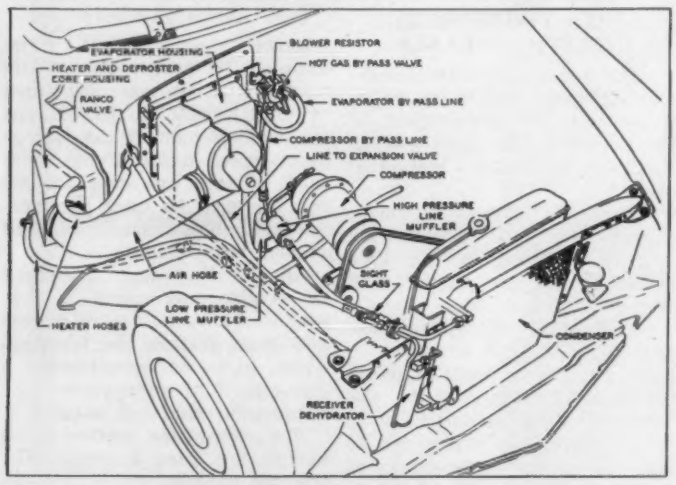

FIG. 1—Front-end system employed on 1956 Buicks. System used in 1957 is essentially the same.

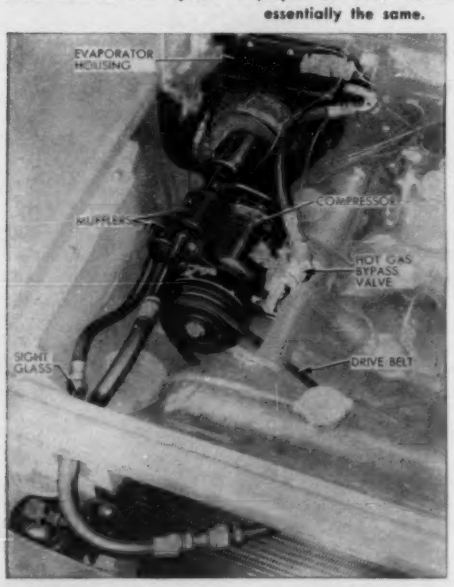

FIG. 2—Major components of 1957 Buick air conditioner.

Compressor

Frigidaire's 5-cylinder axial type reciprocating compressor is employed on 1956-57 Buick conditioners.

Service valves are located on the back of the compressor, the discharge service valve being directly above the suction service valve.

Factory oil charge in the Frigidaire compressor consists of 9 or 12 oz. of Frigidaire 525 viscosity oil. Safe minimum operating charge is 4 oz. Oil supply can be checked as follows:

Operate engine at slow idle for five to seven minutes with air conditioner turned on and blower in high speed position. Stop the engine. Loosen screw in oil test fitting (at forward end just behind mounting ring 43° to the side of the vertical centerline) and allow a little oil to escape. Then tighten screw for a moment and then crack it open slightly. A steady flow of oil indicates the compressor has at least the minimum charge of 4 oz.

Instructions for adding oil will be found in the following section on "Service Hints."

A magnetic clutch drive is employed on the compressor in both 1956 and 1957 Buick systems.

Mufflers will be found in the suction and discharge lines close to the compressor on 1956-57 models (Figs. 1 and 2).

Hot gas by-pass valve is mounted at the compressor on 1957 models. On 1956 models the by-pass valve is located close to the evaporator outlet.

Condenser

Condenser is located in front of the car radiator. Inlet is at top, outlet at bottom.

A combination receiver and drier unit is provided on 1956-57 Buick units. This is mounted on the right (curb) side of the condenser.

A sight glass is provided in the liquid line from the receiver-drier immediately behind the right radiator side baffle in the engine compartment.

(To Be Continued)

BUICK (1)

Buick Motor Div.
General Motors Corp.
Flint 2, Mich.

Prior to 1956 air conditioners offered by Buick as a factory or dealer-installed optional accessory were trunk models. A "front-end" dash model was introduced in 1956 (Fig. 1). System used in 1957 (Fig. 2) is essentially the same as employed in 1956, there being only a few minor differences.

The 1956-57 front-end Buick systems have the condenser in front of the car radiator, the compressor mounted on the engine and driven through a magnetic clutch, and the evaporator assembly mounted on the forward side of the fire wall.

Same blower that serves the car heater and defroster is used for cooling, and likewise with the duct system except that for air conditioning an additional outlet grille is provided in the center of the dashboard. Heater and air conditioner outlets are located at the extreme ends of the instrument panel.

Temperature control is achieved through a hot gas by-pass valve.

Refrigerant-12 is standard. The charge is 5½ lbs. in 1956 models. Five lbs. in 1957 models.

DRASTIC Price REDUCTION
commercial package
AIR CONDITIONERS
WATER COOLED
2-3-5 H.P.

These are brand new, factory stock, nationally advertised, famous brand water-cooled package units. We must move them out of our warehouse to make room for other stock. These units are priced to move fast.

All units have 100% hermetically sealed refrigerant circuits (covered by 5-year factory warranty), humid weather control, handsome naturaltone jacket, 4-way adjustable discharge grill, plenum chamber, water regulating valve, adjustable thermostat, return air grill. Available in either 208/220 volt—3 phase—60 cycle, or 230 volt—1 phase—60 cycle. All units are factory assembled, wired and ready for installation. Exceptionally compact size makes this equipment ideal wherever space is at a premium.

Write for complete details and prices to Box A 5920, Air Conditioning & Refrigeration News.

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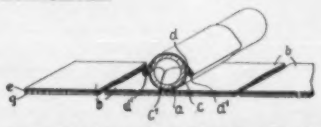
FREE PARKING AND FAST COUNTER SERVICE AT THESE 4 BIG HOUSES

PATENTS

Week of October 15 (Concluded)

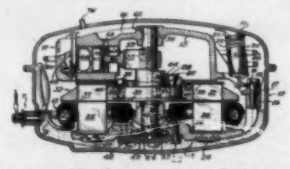
2,809,814. HEATING AND COOLING SYSTEMS FOR WALLS, CEILINGS, AND FLOORS. Alfred Wolf, Basel, Switzerland, assignor, by mesne assignments, to Etablissement Alustra, Vaduz, Liechtenstein.



In a heating and cooling system for walls, ceilings, and floors, the combination of a pipe of heat conducting material for carrying a heat exchange medium, a flat heat conducting element, and securing means for securing said heat conducting element to said pipe in heat exchange relationship, said securing means comprising a pair of elongated semi-cylindrical channel-like parts shaped to enclose substantially the entire circumference of said pipe in tight heat conducting relationship, one part of said pair of parts secured in heat conducting relationship to said flat heat conducting element across the entire width of said heat conducting element between the ends of said heat conducting element, and inter-engaging cooperating reentrant portions along the full length of the edges of said semi-cylindrical channel-like parts joining said parts and securing them around said pipe. . . .

2,809,872. LUBRICATING BEARINGS OF REFRIGERATOR COMPRESSOR. Milton Y. Warner, Evansville, Ind., assignor, by mesne assignments, to Whirlpool-Seeger Corp., a corporation of Delaware.

1. In a device of the class described, a bearing element, a bored shaft rotatively mounted within said bearing element, a thrust plate, a thrust plate



facing, said thrust plate facing and said thrust plate mounted over one end of said bearing element with said thrust plate facing positioned between said thrust plate and said one end of said bearing element, whereby an enclosed space is defined by one end of said shaft, said bearing element and said thrust plate facing, an impeller having a hole in the center thereof, said impeller connected to the end of said shaft within said enclosed space and projecting against said thrust plate facing, said hole in said impeller

(Continued on next page)

Editor's Note: Patents described here have been selected from the "Official Gazette" of the United States Patent Office. They offer only a brief summary of each invention. In some instances only the first part of the digest is presented.

Printed copies of patents, reissued patents, and patent designs may be secured from the Patent Office; patents and reissues are 25¢ each, while designs are furnished at 10¢ each. Address orders to: Commissioner of Patents, Washington 25, D. C.

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ADVERTISEMENTS set in usual classified style. Box addresses count as five words, other address by actual word count. Please send payment with order.

POSITIONS WANTED

SALES ENGINEER: 10 years' selling experience in Midwest area for nationally known manufacturer of refrigeration and air conditioning control valves. Excellent following among manufacturers, wholesalers and contractors. Proven sales record. Desire association with progressive component manufacturer. Experienced in handling field service problems. BOX A5947, Air Conditioning & Refrigeration News.

PRODUCT ENGINEER—Young engineer with design and production experience in the commercial refrigeration and condensing unit field, specializing with condensing units. Familiar with setting up engineering and production systems. Experienced in conducting technical meetings as well as preparing technical literature. Desire company with growing potential. Will relocate. BOX A5957, Air Conditioning & Refrigeration News.

SALES ENGINEER presently employed by Southwestern manufacturer. Ten years' experience air conditioning, refrigeration and heating equipment. Background includes sales, sales management, design, engineering, estimation, merchandising and advertising in above fields. Seeking permanent career position. Will relocate. BOX A5958, Air Conditioning & Refrigeration News.

FIELD APPLICATION and sales. Three technicians desire positions with manufacturers. Available after graduation in March from two year course in refrigeration, air conditioning and heating. Also related courses. Experience in service installation and calculation. Veterans, ages 26-28. BOX A5959, Air Conditioning & Refrigeration News.

POSITIONS AVAILABLE

INSTALLATION AND service man—Full line Carrier dealer offers permanent position to man experienced in electrical wiring, controls, service and installation of air conditioning, heat pumps and oil fired furnaces. Located in sunny Florida, fastest growing area. State age, marital status, education, experience, salary requirements and makes of equipment serviced and installed. Also three references and availability. WEATHERMASTERS ENGINEERING CO., Orlando, Florida.

LEADING MANUFACTURER of air conditioning and refrigeration components has sales engineering opening in New York City. Extensive sealed sales experience in the industry field required. Salary commensurate with ability. Submission of complete employment record prerequisite to personal interview. All confidences respected. Please address all replies to BOX A5934, Air Conditioning & Refrigeration News.

LARGE WELL known manufacturer of refrigeration and air conditioning equipment located in the East has excellent opportunity for man experienced in refrigeration and air conditioning to develop and expand O.E.M. sales department. Application experience with small compressors and condensing units desirable. In reply state education, experience and salary desired. BOX A5956, Air Conditioning & Refrigeration News.

EQUIPMENT FOR SALE

SURPLUS LOT automatic defrost control. Fits practically all refrigerators 110V-AC. List price $10.50 our price $2.25 each. Lots 6-$1.85. Lots 10-$1.60. Miami quantity discount. Write for bulletin. NATION WIDE SUPPLIES, 1353 N.W. 29th Street, Miami, Florida.

FOR SALE—York ammonia compressor, two years old, two cylinder, 5½x5½, shell and tube condenser. Vilter compressors, two cylinder, 5x5 and 4x4. All excellent condition. Operating in Battle Creek, Michigan vicinity. Will accept reasonable offer for all or part. A. G. Weil, REFRIGERATION MAINTENANCE CORPORATION, 321 East Grand Avenue, Chicago.

ALUMINUM ICE cube trays, 14 cubes—Quick release lever. 11" L x 4⅜" W x 1⅝" H. $1.00 each. Lots of 20 or more postpaid. Send for free circulars and bulletins on refrigeration parts and supplies at big savings. WALTER W. STARR, 2833 Lincoln Avenue, Chicago, Ill.

BUSINESS OPPORTUNITIES

HEATING, PIPING, plumbing, air conditioning, fire sprinkler, contracting business. San Francisco Bay area, $450,000.00 volume, 6,500 ft. shop, heavy industrial. Wants retire. Inventory, equipment, total $35,000.00 with $25,000.00 down. Will lease shop. Wonderful climate, fastest growing section California. Lots of work. P. J. RAUCH CO., 1784 Smith Ave., San Jose, California.

FOR SALE: Well established air conditioning business in Florida's fastest growing city. Distributor for nationally advertised line, also dealer for other nationally advertised line. High gross, wonderful possibilities, year round operation. Reason: other interests. Reply BOX A5960, Air Conditioning & Refrigeration News.

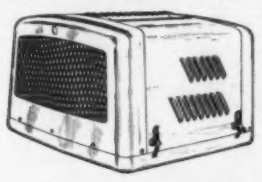
PATENTS

(Continued from preceding page)

cooperating with said bore, means for supplying oil to said enclosed space so that said oil is caused to move radially of said impeller when said shaft is rotated, said thrust plate facing having a plurality of openings therethrough positioned radially of said impeller and a plurality of intersecting slots therethrough. . . .

DESIGNS

181,197. CASING FOR VEHICLE AIR CONDITIONERS. James C. Holby and Robert L. Westrum, Minneapolis, Minn., assignors to D. W. Onan & Sons, Inc., Minneapolis, Minn.

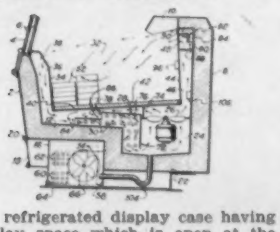


Week of October 22

2,810,266. REFRIGERATOR CABINET STRUCTURE. Clifford H. Wurtz and Harvey R. Tuck, Dayton, Ohio, assignors to General Motors Corp., Detroit.

3. In a refrigerator having a door opening and having an inner shell and an outer shell spaced from one another, said outer shell comprising a wrap-around metallic member forming the sides, top and bottom walls of the outer shell and having a first offset flange adjacent said door opening, said inner shell having a second offset flange adjacent said door opening and substantially in alignment with said first named flange, a relatively thin strip of stainless steel bridging the gap between said first and second flanges, said strip having its edges roll welded to said flanges so as to provide a hermetically sealed joint between said inner shell and said outer shell, an insulating gas having a lower coefficient of heat transfer than air disposed between said inner shell and said outer shell, a trim member adjacent said door opening arranged in spaced relationship to said strip so as to conceal said strip, and insulation disposed between said strip and said trim member.

2,810,267. REFRIGERATED DISPLAY CASE. Phillip J. Reuter, Trenton, N. J., and Donald A. Voorhies, Morrisville, Pa., assignors to C. V. Hill & Co., Inc., Trenton, N. J.



1. A refrigerated display case having a display space which is open at the top for access to customers, a warm air duct having an inlet along one side of the display space, a cold air duct having an outlet along the opposite side of the display space near the top thereof, a refrigerating chamber having evaporator coils therein arranged in a series extending lengthwise of the case, said refrigerating chamber having an inlet side communicating with the warm air duct and an outlet side communicating with the cold air duct, a blower on the outlet side of the refrigerating chamber for circulating air through said chamber and ducts, and means for conducting a portion of the air leaving said chamber back to a point near the foremost coils of the series thereof in the refrigerating chamber, and heating means for defrosting said coils located adjacent said foremost coils in the refrigerating chamber.

(To Be Continued)

Get your copy

Operating Costs of Residential Air Conditioning and What This Means to Dealers and Installers. By R. A. Gonzales—25¢ each.

Mail this ad with your name and address to: Air Conditioning & Refrigeration News, 450 W. Fort St., Detroit 26, Mich.

Refrigeration Problems
And Their Solution
(As Written by Paul Reed)

The late Paul Reed, one of the refrigeration industry's most respected writers and teachers, wrote a column on "Refrigeration Problems and Their Solution" which was published regularly in AIR CONDITIONING & REFRIGERATION NEWS for more than 15 years.

Readers throughout the years have hailed this written material as some of the most practical and helpful that has ever been published. Fortunately, the author had an opportunity to revise some of this material and the NEWS is currently re-publishing it.

Advice on Drying Hermetic Units

QUESTION:

We have a fairly good shop with a bake oven, a small lathe, a pretty good vacuum pump, and plenty of good hand tools.

We cannot get repair parts, so we have to make what few we need. It's surprising how few parts we have to replace though—that is, compressor parts. Most of the trouble is from stopped capillaries, leaks, burned-out motors, and stuck compressors—and many of the latter can be freed without replacing many parts.

We haven't rebuilt many units, but so far we have had pretty good luck. However, we don't believe we are getting them dry enough, even though we bake them in the oven for several hours. During that time, we have the vacuum pump running on them, pulling a 29-in. vacuum. Also, we put on a good big silica gel drier.

We have had a couple show frozen capillary tubes a week or so after they were repaired. On those two, we replaced the drier and so far, they haven't given us any more trouble. We can't understand where that water came from. What do you suggest?

ANSWER:

Just baking in the oven, with a 29-in. vacuum isn't usually enough to dry a hermetic unit. But before going into that, here are some other points.

MOISTURE IN OIL

Just how dry is the oil that you are using? If you are taking it from a large container, moist air must be let into the container when you take out some oil, unless the air to the container is let in through a drier, and the container kept tightly sealed.

It is surprising how much moisture oil can absorb from room air. Many servicemen are now buying their refrigeration oil in quart cans, and discarding the remaining oil or using it to oil motors, etc. It is suggested that you check your methods of handling oil.

(For a discussion on how to protect oil in drums or other large containers from contamination by moisture and also dust and foreign matter, see Chapter 32 of Volume J-2 of Refrigeration Problems.)

MOISTURE FROM REFRIGERANT CYLINDERS

You could be introducing moisture with the Refrigerant-12. When you get Refrigerant-12 in factory-filled cylinders, it has a moisture content of less than 10 parts per million corresponding to a dewpoint of about 6° F. It is doubtful, therefore, that you would get enough moisture to bother a household refrigerator whose evaporator is not apt to be colder than the dewpoint of Refrigerant-12 as it comes from the factory.

Quite often though, small service cylinders have quite a bit of moisture in them, and this may be a possible source of your moisture, if you are using ordinary service cylinders, that you use out on service.

There is another source of moisture in hermetic units, and it could very well be the one responsible for your trouble, especially if the units that showed moisture were units that had burned out stators that were rewound and put back into the unit; or if the unit was open, exposed to the damp air for a couple of days—or even less.

There can be a great deal of moisture trapped in the winding of the stator. The wire does not have to be cotton-covered for this to happen. Moisture can be trapped in stators wound with wire with synthetic insulation.

Moreover, this moisture down in the motor stator windings is extremely difficult to get out; but finally, after the unit has run awhile, it gradually gets out of the windings into the unit, and there can often be enough of it to cause trouble.

Even in the factories where hermetic units are made, and where they have elaborate and expensive equipment, the moisture in the stator windings constitutes a real problem.

In a bake oven, it is difficult to get the heat down into the motor winding, and thus vaporize the moisture trapped there. Flushing with dry air with the motor running is one method that is used, and with fairly good results, especially if alternated with a low vacuum in the order of 100 microns or less, absolute pressure.

This low a vacuum can only be obtained by a commercial vacuum pump, for it takes 25,000 microns to equal one inch of mercury pressure, so 100 microns is within 1/250 of an inch of mercury of a perfect vacuum.

One micron is 1/1,000 of a millimeter and there are approximately 25 millimeters to an inch. A commercial vacuum pump is a bit expensive, but is a very useful piece of shop equipment.

LOW VOLTAGE TO HEAT THE STATOR COIL

One method of driving the moisture from the coils and slots of the stator is to connect a 15 to 20-volt current to the main winding of the stator. This will warm the coils and cause the moisture to vaporize, and a vacuum on the motor-compressor will carry away the vaporized moisture.

The low voltage will of course not run the motor, but some care must be used, and some experimental work must be done to get just the right voltage for the winding. If the voltage is too high, the insulation may be damaged, and if it is too low,, it will not warm the stator coil enough to drive out the moisture.

Different makes and types of motors may require different voltages. This method has been used in factories but is rather slow.

SUBMERSION IN HOT OIL

We have run across a couple of comparatively small shops doing hermetic unit repair, who use a very effective but simple and inexpensive method of drying out hermetic unit stators.

This method consists simply of a tank of hot oil. Preferably the tank should be insulated (a couple of inches of glass fiber makes a good insulation) and kept at about 180° F. to 200° F. by electric submersion or strap-on heaters controlled by a heating type thermostat (opens on rising temperature). A high grade oil should be used, such as a highly refined refrigeration oil, of a pale straw color, or even a white oil.

The stator, or if desirable, the entire motor-compressor with the dome off, is totally immersed in the hot oil. The hot oil goes down into all crevices and through the windings and into the coil slots.

The moisture is heated and vaporized and comes to the surface of the oil as bubbles, along with bubbles of trapped air. After the first hour or so, depending upon how much water was in the windings, the bubbles gradually disappear, indicating that the moisture has vaporized and that the stator is dry.

A shelf is provided above the oil level, on which the stator can be placed to drain and to cool enough to be handled. However, it should be quite warm when taken out to use, for as long as it is above the dewpoint temperature of the room, moisture does not condense on it.

Obviously, the stator will not stay dry indefinitely, after it is taken from the oil tank, but it will stay dry enough, for as long as is required to assemble the motor-compressor and get the cover back on.

One shop operator keeps a large amount of his finished hermetic parts in this hot oil to keep them from corroding. In fact, this was originally the main purpose in building his tank.

He has a sizable tank, so he simply keeps many of his parts and stators, in the hot oil tank. They keep clean and uncorroded in there, and when he takes them out they are clean, dry and above the dewpoint temperature of the room, so that they stay clean and dry long enough to use them.

DOUBLE EVACUATION OF THE UNIT

The motor compressor after assembly is mounted on the unit and, less controls, is put in the oven held at about 225° F., and with a vacuum of 29 to 29½ in. for about an hour. The vacuum pump is then stopped, the vacuum is broken to zero gauge or above, with dry nitrogen, CO_2, or dried air.

In fact, this is a good time to raise the pressure to about 100 p.s.i.g. and test for leaks with a soap and water solution. If you like, you can mix some Refrigerant-12 with the nitrogen, CO_2, or air and test with a halide torch.

After this, and with the unit still warm from the oven, again pump a 29-in. vacuum for at least half an hour, and charge with refrigerant to the correct amount, put on the controls, and set the unit on test.

AIR CONDITIONING SALES ENGINEER

Exclusive W. Pennsylvania franchise available to represent leading air conditioning and refrigeration products for the right sales engineer designed to enter own business. Industry knowledge and sales experience with engineers, contractors and wholesalers necessary. For interview contact J. T. Maloney, Reg. Sales Manager, at Penn Sheraton Hotel January 21 through January 23, or write

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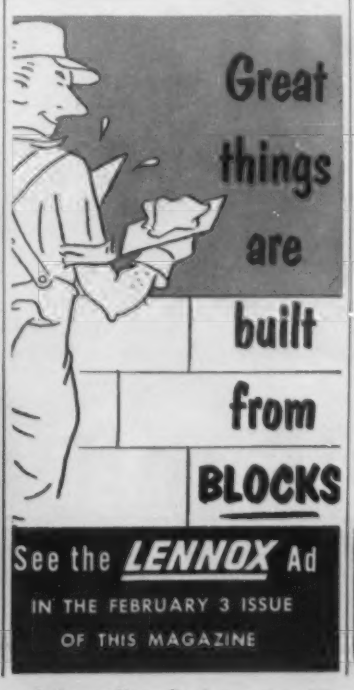

See the LENNOX Ad
IN THE FEBRUARY 3 ISSUE
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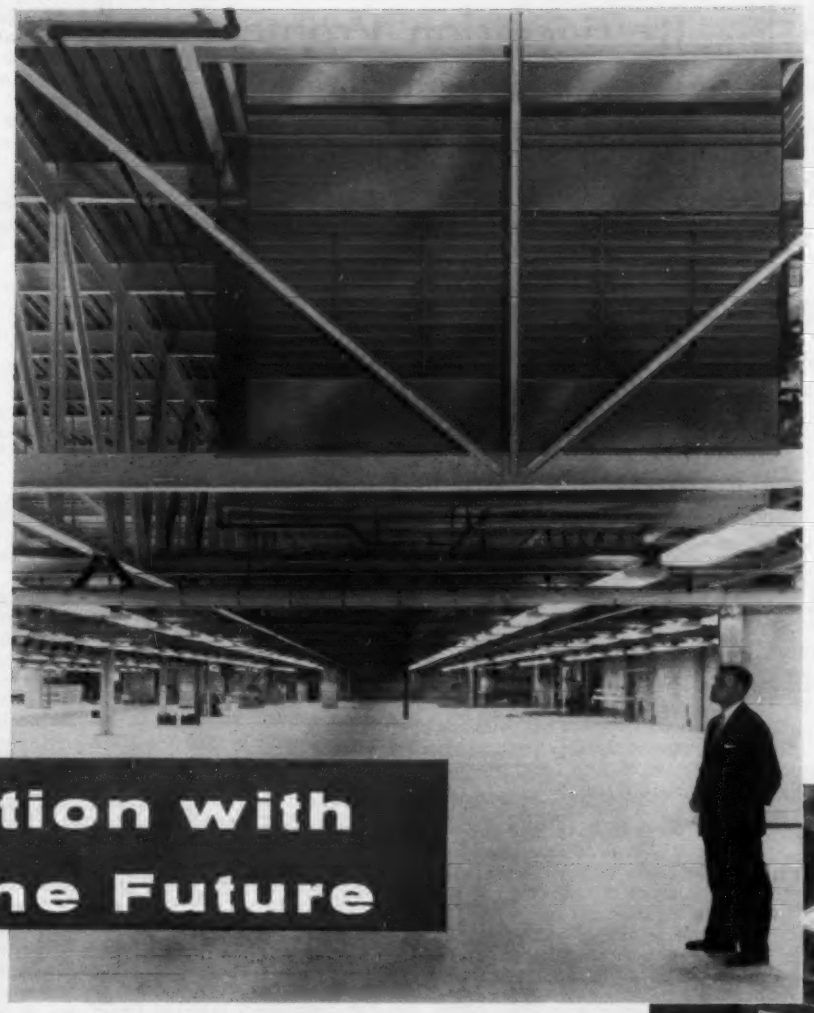


'HAH' Horizontal Air Handling Unit with damper section and steam coil in new completed goods area.

...an Installation with an "I" to the Future

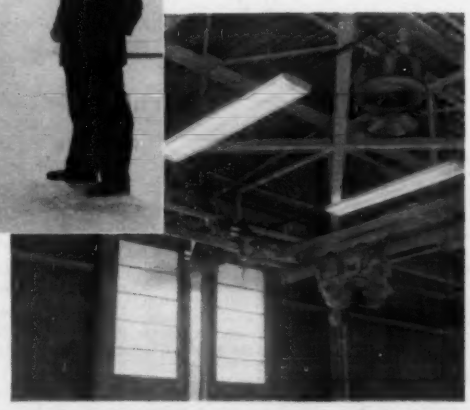
An eye to the future is the difference between leadership and mediocrity in industrial planning.

Intelligent, modern, long range thinking guided the over-all design and construction of this spacious and beautiful new Bostitch staple plant in East Greenwich, Rhode Island. And Dunham-Bush is proud to have been a part of the planning team.

The installation of Dunham-Bush equipment was expertly planned . . . effectively meeting today's demands, and readily adaptable to those of tomorrow. Within this modern plant which encompasses over 400,000 square feet, Dunham-Bush equipment assures maximum controlled atmospheric comfort . . . the year 'round.

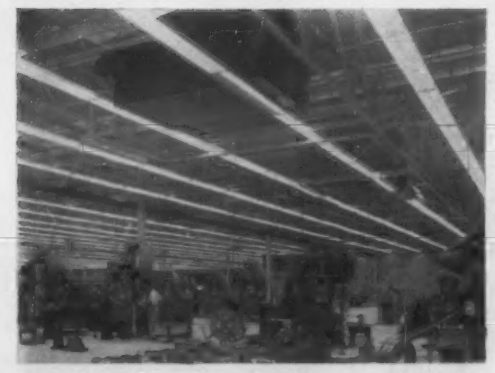
Truly an application of Dunham-Bush's "One Source—One Responsibility", the entire installation includes more than seventy heating and cooling units. Dunham-Bush Air Handling units and Evaporative Condensers, Heat-X Mufflers and Heat Interchangers, and Brunner 75 and 100 horsepower Compressors form a real climatic network of quality heating and cooling equipment.

A heating or cooling installation with an eye to the future is done best with Dunham-Bush.



Unit heaters at receiving and shipping department . doors blanket cool areas with warm air.

'HAH' Horizontal Air Handling Unit in Lab area of plant.



General view of portion of manufacturing area. 'HAH' units designed for future addition of air conditioning coils.

'MZ' Multizone unit services executive offices, cafeteria, engineering, drafting and general office areas.

Brunner Compressors, Heat-X mufflers and heat interchangers, Dunham-Bush evaporative condensers, serve the cooling network.

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